Summary Proceedings

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Office of Fossil Energy
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Public Meetings for Views and Comments on the Conduct of the 1992 Clean Coal Technology Solicitation

Cheyenne, Wyoming, October 30, 1991
Louisville, Kentucky, November 12, 1991

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CHAPTER 1

INTRODUCTION AND OVERVIEW

1.1 INTRODUCTION

Two public meetings were convened by the Department of Energy (DOE) in October and November 1991 in order to obtain views, comments, and recommendations with regard to the forthcoming Clean Coal Technology V solicitation. In the sections that follow, brief descriptions are provided of the background to the CCT solicitation and the public meetings, and how the meetings were conducted. Subsequent chapters of this report present the discussions that ensued at each of the meetings, and the views, recommendations, and concerns that were expressed by attendees. The report also includes a compilation of the written comments that were received. Finally, an appendix contains attendee registration data and transcripts for opening and closing plenary sessions.

The meetings took place as follows:

1.	Cheyenne, Wyoming	Little America Wednesday, October 30, 1991
2.	Louisville, Kentucky	Galt House Hotel Tuesday, November 12, 1991

1.2 CLEAN COAL TECHNOLOGY PROGRAM HISTORY

The Clean Coal Technology Demonstration Program is a $5 billion national initiative to demonstrate new, advanced concepts for using coal more cleanly and efficiently than today's technology. The program is comprised of a series of competitions to select projects for up to 50% federal financing.

1985

- **March 18, 1985:** Prime Minister Mulroney and President Reagan meet in Quebec City to discuss bilateral issues including the environment. Each leader agrees to appoint a Special Envoy to examine the acid rain issue and report back before next summit.

- **December 19, 1985:** Congress passes Public Law 99-190 making available nearly $400 million for DOE to cost-share clean coal technology projects. Competition to be open to all U.S. coals for all market applications.

1986

- **January 8, 1986:** U.S. and Canadian Special Envoys on Acid Rain (Drew Lewis and William Davis) submit recommendations calling for U.S. to undertake $5 billion, 5-year program to demonstrate innovative clean coal technologies that can help curb acid rain (a more narrow focus than the Congressional guidance).

- **February 17, 1986:** DOE issues call for proposals for $400 million appropriated for Congressionally-directed Clean Coal Technology Program (Round #1).

- **March 19, 1986:** Following meeting with Prime Minister Mulroney, President Reagan endorses Special Envoy's Report but defers request for additional funds until DOE finishes Round #1 competition.

- **July 25, 1986:** DOE picks nine Round #1 projects from 51 proposals. Negotiations begin on cooperative agreements.

1987

- **March 18, 1987:** Following expression of Canadian concerns that U.S. is acting too slowly to implement Special Envoys' recommendations, President Reagan calls on Congress to appropriate full funding for $2.5 billion federal share of Clean Coal Program over five years (1988-92). Administration determines that some Round #1 projects (with a federal share of $150 million) meet Special Envoys' criteria and should be credited as part of President's expanded Clean Coal initiative.

- **March 20, 1987:** DOE completes negotiations for first two Round #1 projects and signs agreements.

- **September 30, 1987:** After completing negotiations with two more Round #1 projects earlier in the summer, DOE sets September 30 as deadline to complete negotiations with five remaining projects. By October 6, DOE completes talks with three more projects and announces that the final two have withdrawn. DOE selects four alternate projects to replace the two withdrawn.

- **December 22, 1987:** Congress passes appropriations bill providing $575 million for DOE to conduct Round #2.

1988

- **February 22, 1988:** DOE issues call for Round #2 proposals, this time fashioning competition to adhere as fully as practicable to Special Envoys' criteria.

- **September 27, 1988:** President signs FY89 appropriation bill providing funds to complete Round #2 and advance appropriations (of $575 million) for Round #3.

- **September 28, 1988:** Secretary Herrington announces selection of 16 Round #2 Clean Coal Projects valued at more than $1.3 billion (federal share: $537 million). Negotiations begin.

- **December 9, 1988:** After completing negotiations with two of four alternate Round #1 projects earlier, DOE announces that it must terminate negotiations with one of the alternates. To replace the terminated project, DOE selects three more replacement projects from Round #1 alternate list. This brings total Round #1 projects to 13, nine of which have been negotiated.

1989

- **January 9, 1989:** President Reagan's FY 1990 budget proposes to stretch out Special Envoys' 5-year timetable from 1992 to 1995 (for project selection) and to 1997 (for completion of $2.5 billion funding).

- **February 9, 1989:** President Bush revises FY 1990 budget request to reinstate 5-year schedule recommended by Special Envoys.

- **May 1, 1989:** DOE issues call for Round #3 proposals (following 3 public meetings in January and February).

- **August 29, 1989:** DOE receives 48 proposals, with total project value in excess of $4 billion. Twenty states are represented in the proposal list.

- **November 3, 1989:** DOE files "Programmatic Environmental Impact Statement" with EPA. Completion of the document, required by NEPA, clears the way for Round #3 selections.

- **December 20, 1989:** DOE announces 13 new projects as choices in Round #3 competition.

1990

- **April 4, 1990:** DOE signs agreement with American Electric Power for single largest government/industry project to date ($659.9M); the agreement marks the ninth project to be signed from the Round #2 competition.

- **May 15, 1990:** DOE announces delay in issuing CCT IV call for proposals (originally scheduled for 1 June) until Congressional uncertainties, regarding pending Supplemental Appropriations and Clean Air Act Amendments, have been resolved.

- **November 20, 1990:** DOE restarts CCT Program with the issuance of draft solicitation asking the public to comment on the proposed document slated to be released by February 1, 1991.

- **December 18, 1990:** Industrial sponsors for three of 38 clean coal projects inform DOE that they will not continue their demonstration ventures. The 35 active projects remaining include 29 that are under agreement.

1991

- **February 1, 1991:** Acceleration of negotiation and review process directed by Secretary Watkins results in successful negotiations for 11 of 13 Round #3 projects within the past year, along with all remaining projects from Rounds #1 and #2.

- **May 20, 1991:** 31 companies submit proposals in DOE's fourth clean coal competition.

- **June 7, 1991:** After a series of site and financing related extensions DOE opts to discontinue funding for a Round #1 project planned for "coprocessing" of coal, oil into clean fuels.

- **September 12, 1991:** DOE adds nine new projects in completing fourth round choices. Together with 33 other active ventures selected in earlier competitions, they bring the total government-industry investment in CCT demonstrations to $4.6 billion, 60% of which is funded by private companies and States.

- **September 17, 1991:** Major cost increases and mixed testing results lead to termination of Round #2 project selected for demonstration of innovative coal burner.

- **November 12, 1991:** DOE completes two public meetings conducted to prepare for fifth round solictation scheduled for issue on July 6, 1992.

1.3 THE SEB

The primary recipient of the views, comments, and recommendations that ensued from the public meetings will be the CCT V Source Evaluation Board (SEB). The SEB constitutes a select group of government professionals whose role is to solicit and evaluate the proposals. Specifically, the functions of the SEB are to:

- Determine the most appropriate method of selecting and applying the qualification and evaluation criteria and techniques that will best assist the Source Selection Official to decide upon the successful offerors with which negotiations will be initiated.

- Use its best judgment in such application.

- Report fully on its work and the results thereof to the Source Selection Official.

In carrying out these functions, the SEB is responsible for the impartial and equitable evaluation of all prospective contractors' proposals and for the findings or recommendations it presents to the Source Selection Official. Board evaluations and conclusions will be based on analyses of proposals and other information affecting a potential contractor's standing and on reviews of committee evaluations.

1.4 MEETING PLANNING AND FORMAT

The public meetings were formally announced in the *Federal Register* of September 23, 1991, under the heading, "Notice of Meeting; Invitation for Public Views and Comments on the Conduct of the 1992 Clean Coal Technology Solicitation." The notice reviewed the purpose of the meetings, provided a proposed outline of the anticipated solicitation, and identified "a number of specific issues and concerns that DOE is particularly interested in receiving public comments on:"

1. Modifications to the Amount of Requested Assistance.
2. Objective of the Fifth Solicitation.
3. Reduction of Toxic Emissions Criteria.
4. Carbon Dioxide Emissions and Global Warming.
5. Financial Assistance Options.
6. DOE May Require Use of "Program Income" Prior to DOE Cost-Sharing.
7. Commercial Performance Criteria Evaluation.
8. Program Policy Factors.
9. Evaluation and Development Activities.
10. Relative Weight of Criteria.
11. Negotiation Issues.

Additional publicity was obtained by the issuance of a DOE News Release on September 27, 1991, and by a mass mailing of the notice to over 2,000 addresses of individuals who had previously responded to DOE solicitations or notices, or who had expressed an interest in being kept informed of CCT activities.

Pertinent information of possible use or interest to meeting attendees was compiled into a *Background Information* document, which was distributed at each public meeting, or provided upon request by mail or telephone. The report is a compendium of recent information related to the CCT Program; including news releases, speeches, evaluation/ selection/implementation information, and appropriations language.

As was described in the *Federal Register Notice*, each meeting commenced with a brief plenary session, which included introductory remarks and program overviews by DOE officials. The audience then briefly recessed and reconvened into concurrent working groups led by DOE officials. All of the working groups discussed essentially the same issues; the number of groups varied in each city in response to the attendance. In Louisville, there were three working groups, while in Cheyenne, two working groups were adequate. Finally, attendees met in a closing plenary session in each city. The highlights and recommendations of each of the working groups were reviewed and summarized, and the meetings were concluded. Opening and closing plenary sessions transcripts are included in the appendix. However, there was no transcription of the working groups; each group cochairman was responsible for preparing notes of the salient aspects of the proceedings. These working group summaries are provided in Chapter 3 of this report.

CHAPTER 2

SUMMARY ISSUES AND SUGGESTIONS

2.1 INTRODUCTION

As was noted in Section 1.4, the meetings notice published in the *Federal Register* listed eleven issues and concerns of particular interest to DOE. This chapter provides capsule statements of the issues that were raised and representative excerpts of the public's suggestions regarding these issues.

It is important to note, however, that this report reflects the views, opinions, and comments expressed by the public, and that inclusion here does not in any way reflect DOE's agreement with these statements. However, DOE will fully consider and assess the merits of all feedback, oral and written, received from the public prior to issuance of the CCT V Solicitation.

2.2 MODIFICATION OF THE AMOUNT OF REQUESTED ASSISTANCE

Comments and Suggestions

An alternative approach would be to require a higher cost-share from proposers of retrofit projects where the portion of "new technology" is a small part of the total project.

DOE could establish "size ranges" in the PON for various eligible technologies to eliminate redundancy.

DOE could implement a procedure that would enable it to have a "best" and a "final" offers list prior to final selection.

DOE should not make selections based on a reduced project scope relative to the proposed. This would complicate negotiation of a cooperative agreement at best and might cause withdrawal of the proposal at worst.

In cases where the proposed project includes a "new application" of existing technology, as opposed to a "new technology project," DOE should be positioned to negotiate with the proposer over the overall programmatic merits before settling on a funding support level.

DOE should address the issue by providing an additional incentive for lower requested amounts in the criteria.

Often new power cycle technologies require grassroots development. As a result, this type of configuration would be penalized, as compared to retrofits, by the application of additional incentives for lower DOE amounts of financial assistance.

The onus of responsibility for packaging a project is on the proposer. As such, DOE should accept or reject the project as proposed.

2.3 OBJECTIVE OF THE FIFTH SOLICITATION

Comments and Suggestions

CCT V should be focused upon full-stream deployment of FGD technologies to augment the "slipstream" projects from earlier rounds. A full-stream demo is needed before equipment vendors will be positioned to offer performance guarantees required by the utilities.

The CCT Program's primary goal is to provide financial assistance to demo projects, rather than to assist full deployment, and this goal should not change.

Round #5 should be aimed at assisting development of those projects which could be positioned to replace existing facilities in the next century.

The emphasis on advanced systems and high-efficiency has biased the PON toward new units rather than upgrades of existing units to facilitate life extension.

DOE should prescribe a portion of the available monies for funding retrofits and a portion for funding "future replacement" technologies in advance of the release of the solicitation.

Use by DOE of higher standards for efficiency and emissions, than are now required as benchmarks for new technologies, would aid in selecting coal technologies that would be competitive with other energy sources in the future.

Demonstration of technologies aimed at reaching the market in the post-2010 time frame would be difficult for private industry to finance due to present worth considerations. A proposed solution would be for DOE to fund smaller, less expensive projects by emphasizing demonstration at less than full commercial-scale.

There are a "wide range of legitimate technologies which need funding" but DOE has favored the development of existing technologies. On this occasion, the emphasis should be on providing incentives to those willing to develop demo projects utilizing novel technologies.

The industrial sector has to contend with unfavorable "economies of scale" as compared with utilities. As such, DOE should be more flexible in its treatment of commercial efficiency estimations to accommodate those technologies of intrinsic value to industrial users.

DOE should pay extra attention to demonstration aimed at technologies which specifically address provisions of the Clean Air Act Amendments. DOE should "step back" and re-assess whether or not it is addressing the real needs of coal-burning utilities.

CCT V should provide a clear focus for the development of a project to demonstrate coal-based liquid fuels and should not be constrained by targeting at the transportation fuels market, but should be more flexible.

There is still a need, under CCT V, for additional pre-combustion process development projects. Pre-treatment techniques would probably yield a coal-based product that would be attractive in certain export markets.

Utilities and other users select technologies based on overall economics, not just high efficiency. Thus, the PON should give greater weight to cost effectiveness.

Public opposition to siting of large utility projects will have the effect that new power plants will be smaller than those of the past. DOE should seek proposals for small (about 50 MW) power plants demonstrating new, highly efficient generation technologies.

2.4 REDUCTION OF TOXIC EMISSIONS CRITERIA

Comments and Suggestions

Establish "extra credit" in the PON for those projects addressing reduction of toxics.

DOE should exercise caution about providing any credit to incentivize toxics reductions because it may, unwittingly, transfer the problem from an air-based one, to a water-based one.

Because of the importance of the issue, toxics should be treated by a criterion, however, the points for the criterion should be relatively small because of the high uncertainty surrounding the subject.

DOE should list a number of references on the subject of air toxics that proposers would consult and provide emission/capture characteristics of their process with respect to particular toxics specified.

Air toxic control technology should not be a separate category or a program policy factor.

Incorporation of toxic reduction technologies may be premature because EPA has not promulgated regulations affecting air toxics. Additionally, air toxic reduction technology is not yet mature and may not be ready for demonstration.

DOE should write a criterion for "regulated emissions" without specifying any particular emission. Performance of a proposed technology relative to a benchmark technology for the particular application would determine the rating given the proposal for this criterion.

Even if DOE has incomplete information about toxics control characteristics of proposed technologies and emission requirements to be promulgated by EPA, DOE is justified in using this information in selection. Furthermore, process developers know more about the toxic emissions of their technologies than they sometimes admit.

DOE should use current and future projects in the CCT Program to gather data on toxics emissions.

2.5 CARBON DIOXIDE EMISSIONS AND GLOBAL WARMING

Comments and Suggestions

The utilities would, at present, be unwilling to provide 50% of the funding required to affect CO_2 reduction in advance of the issuance of standards.

Because of the fact that externality charges related to noxious emissions from coal-based power plants have been included in rulemaking by about 27 states, some provision should be made by DOE in the structure of the PON to accommodate and encourage additional coal use in those states.

Whereas CO_2 removal from gas fired systems is commercially available, removal of CO_2 emissions from coal-based systems is still in the "proof-of-concept" stage. It may be premature of DOE to incentivize CO_2 removal in the PON for CCT V.

DOE should tackle CO_2 reductions in some capacity, possibly by incentivizing liquid fuel forms or low sulfur feedstocks amendable to the best available CO_2 reduction technology.

The issue should be addressed in the PON indirectly by emphasizing high-efficiency.

In Round IV DOE delivered a "double whammy" with respect to high-efficiency. "Extra credit" was given to technologies that exhibited reduced emissions for CO_2, but the technologies that qualified for this had already earned high marks for their high-efficiency. DOE is urged to eliminate this double counting.

"Extra credit" is a less satisfactory approach to defining the technologies that DOE is seeking than is well written criteria. "Extra credit" is open-ended: the proposer does not know how many credits are available or on what basis they are awarded.

2.6 FINANCIAL ASSISTANCE OPTIONS

Comments and Suggestions

DOE's primary function in the CCT Program is not the reduction of a particular sponsor's capital obligations, or the provisions of certain credits, or price differential payments for eligible units of production, but rather, the concept of risk reduction through sharing in the cost of development. As such, the existing financial assistance structure would be adequate to fill the objective.

2.7 REQUIRE USE OF "PROGRAM INCOME" PRIOR TO DOE COST-SHARING

Comments and Suggestions

Because FGD retrofits et al are, for the most part, not revenue generating, they are, in effect, at a comparative disadvantage.

Perhaps the notion of providing extra-credit to those participants showing a willingness to contribute income, on a contingency basis, should be considered.

Currently project sponsors are not expected to credit revenues generated during the operating phase against the project operating costs. This is considered to be a reasonable approach and should be continued.

Because demonstration plants are smaller than commercial size and need to conduct a range of test runs, they rarely, if ever, are profitable. Thus, there is little chance a proposer could accrue windfall profits during the operating phase.

Obligating operating revenue to the overall project is a financial disincentive to bidding on the solicitation.

2.8 COMMERCIAL PERFORMANCE CRITERIA EVALUATION

Comments and Suggestions

The computer model is unfair, as used. DOE should delineate its efficiency computation methodology in the PON for Round #5.

The concept of calculating efficiency from mine-mouth to end-use is proposed, rather than basing efficiency on only the particular process unit.

DOE should continue to grant equal weight to technical criteria and commercialization criteria.

To encourage non-utility projects, DOE should evaluate efficiency and environmental performance in comparison to baseline cases in the same industry.

DOE should make the cost of electricity (or cost of product for industrial systems) an evaluation criterion. This cost criterion should be applied against the commercial embodiment of the proposed project to ensure that cost effective technologies are selected. Pre-combustion processing is offered as a specific example of a potential cost effective approach to reducing SO_2 and particulate emissions as well as coal transportation costs.

2.9 PROGRAM POLICY FACTORS

Comments and Suggestions

The western U.S. has somewhat unique problems that should be facilitated in the PON for CCT V. The West needs cost effective technolgies which can, to begin with, utilize low sulfur coal and then ratchet down on the emissions of NO_x, CO_2 and toxics.

Industrial users (steelmakers in particular) are facing a serious problem with air toxics from coke production. Program policy factors should change to encourage industrial users to modify plants to meet compliance requirements.

The PON should be more open about the use of foreign technology. In certain instances, foreign suppliers are essential to carrying out process goals.

Because water is such a valuable resource, particularly in the western U.S., water use efficiency should be considered in the selection of projects.

DOE should emphasize the importance of the production of low sulfur liquid substitutes for imported oil.

DOE should issue a "statement of goals and objectives" as a precursor to issuance of the PON. This would enable would-be proposers to structure a project in accordance with DOE's stated goals.

Prior solicitations have been "skewed" in favor of utilities. CCT V should redress the balance by providing more programmatic encouragement for industrial projects.

Program policy factors in PON V should be expanded to assure balance between long lead time, high-efficiency, high-performance technologies and technologies that will find application in retrofitting or repowering existing facilities.

With passage of the CAAA of 1990, the need to give special attention to near-term reductions of SO_2 and NO_x emissions diminished. If continuation of the program policy factor addressing this issue is no longer necessary because of legislation, consideration should be given to dropping it.

DOE needs to clearly state the objectives of CCT V in the PON. This information allows potential proposers to place program policy factors into context. Thus proposers can "self-select" and propose projects that they feel best meet the objectives.

2.10 EVALUATION AND DEVELOPMENT ACTIVITIES

Comments and Suggestions

DOE should exercise its ability to allocate up to 10% of project cost to R&D activities, but the subject of such R&D should be restricted. Acceptable subject matter for R&D activities would be to improve definition of important process parameters that are already known in a general way.

DOE should prescribe particular eligibility requirements in the PON to indicate what kind of design verification testing would be funded and what may not be allowable.

DOE should require the proposer to demonstrate how the development activities will address new technology risk mitigation and increase the probability of commercial success.

DOE should require that decision points be implemented so that projects which don't make "satisfactory progress" by such measure may fail by mutually understood criteria.

DOE should consider providing a specific amount of funds for a separate category, such as, "novel technology group" so that projects which don't require test work may compete for known available funds.

DOE is cautioned to take care not to select proposers who wish to use the available 10% of project funds for a development activity but do not intend to complete the project. To avoid this, DOE should look for evidence of commitment to follow through with the demonstration project.

DOE should evaluate proposed demonstration activities within the structure of the existing evaluation criteria.

It would be appropriate for developmental activity to take place at off-shore pilot plants if it could be shown that this approach had quantifiable benefits to the U.S.

2.11 RELATIVE WEIGHT OF CRITERIA

Comments and Suggestions

DOE should take another look at all issues pertinent to the establishment of its criteria. Criteria should be verified as consistent with DOE's statements on policy goals and objectives.

The rationale behind "extra credit" for certain socio-economic benefits should be clearly delineated in the PON. Additionally, these credits should be analyzed to ensure they avoid "double counting" and are consistent with all other "macro" aspects of the company.

An alternative weighting scheme to that used in PON IV for the commercialization factors is proposed: 1) Environmental Performance at existing facilities (20%), 2) Improved Thermal Efficiency (5%), 3) Commercialization Approach (20%), and 4) Reduction of CO_2 and toxics emissions (5%).

Finance/cost criteria should carry more weight. A proposer's willingness to commit funds to a project is a testament to its determination that the technology is "technically ready" to perform.

More weight should be placed on the commercialization factors and less on the demonstration factors. This would have the effect of promoting higher risk technologies that are in an early state of development.

Economic performance should be an important element in making selections. Criteria used to evaluate cost effectiveness should be explained clearly in the PON.

The objective of the CCT Program should be to reduce the private sector's financial risk of demonstrating promising new technologies. The CCT Program should not be used to subsidize commercial deployment of a technology.

2.12 NEGOTIATION ISSUES

Comments and Suggestions

There were no issues raised at the meetings which warranted debate under this heading.

CHAPTER 3

SUMMARY PROCEEDINGS OF THE WORKING SESSIONS

3.1 THE FIRST PUBLIC MEETING

TWO WORKING GROUPS
CHEYENNE, WYOMING
OCTOBER 30, 1991

3.1.1 Working Group Number 1

Public Meeting of October 30, 1991
Cheyenne, Wyoming

Joe Strakey, Chairman
Stewart Clayton, Co-chairman

The organizations represented at this session were as follows:

Bethlehem Steel
Carbon Fuels Corp.
University of Wyoming
Fluor Daniel
Stone & Webster
Allegheny Power
Clean Coal Technology Coalition
Basin Electric
Babcock & Wilcox
Governor's Office
Pacific Rim Services
Pure Air
Casper Star Tribune
Congressman Craig Thomas' Office

Working Group Number 1 was comprised of 19 participants and included a diverse mix of representatives from utilities, architect/engineering companies, equipment manufacturers, steel industry, technology developers, universities, state government, congressional staff, and the news media.

The intent was to focus the discussions on the following general structure of discussion topics:

- Modifications to the Amount of Requested Assistance
- Objective of the Fifth Solicitation
- Reduction of Toxic Emissions Criteria
- Carbon Dioxide Emissions and Global Warming
- Financial Assistance Options
- DOE May Require Use of "Program Income" Prior to DOE Cost-Sharing
- Commercial Performance Criteria
- Program Policy Factors
- Evaluation and Development Activities
- Relative Weight of Criteria
- Negotiation Issues

Modification of the Amount of Requested Assistance

This topic was predicated upon the fact that, in certain instances, respondents to the CCT IV round included within the scope of the project (i) features that were not germane to fulfilling the goals of the Clean Coal Program, (ii) duplicative systems and/or equipment that benefitted plant upgrade considerations rather than improving the reliability of clean coal demonstration, (iii) were at a scale larger than that deemed necessary for adequate demonstration of the technology.

As a result, the question posed to the attendees was, "Should the DOE be able to redefine a particular project in order to reduce the estimated project cost?"

Opinions in Response Included:

- An alternative approach would be to require a higher cost-share from proposers of retrofit projects where the portion of "new technology" is a small part of the total project (i.e., an "engineering fix"). A project comprised mainly of new technology should be entitled to a greater amount of DOE cost-share because the project risk is higher.

- DOE could establish "size ranges" in the PON for various eligible technologies to eliminate redundancy.

- DOE could implement a procedure that would enable it to have a "best" and a "final" offers list prior to final selection.

- DOE should be more specific about its policy on cost reduction techniques.

General Conclusions:

The participants did, in the majority, prefer that DOE's role should be to evaluate and select the projects "as proposed." However, DOE should stress in the PON that it would (i) favor that project that is the least size to demonstrate the technology, (ii) favor the project which eliminates system or component duplication. The consensus was that if DOE started "slicing the project apart" the project team may disintegrate for a particular project.

Objective of the Fifth Solicitation

The topic tended to divide the attendees into those favoring the retrofit and upgrade of existing plants to facilitate life extension, and those favoring a focus on improving options for new or replacement plants in the future.

One of the pro-retrofit views expressed was that CCT V should be focused upon full-stream deployment of FGD technologies to augment the "slipstream" projects from earlier rounds. It was believed that such scale-up would bridge the gap between slipstream tests and full commercial deployment. It was suggested that a full-stream demo is needed before equipment vendors will be positioned to offer those performance guarantees required by the utilities.

The counter view was that the CCT Program's primary goal was to provide financial assistance to demo projects, rather than to assist full deployment, and that this goal should not change. Moreover, it was suggested that the early rounds had been aimed at retrofitting to accommodate clean-up technologies, and that Round V should be aimed at assisting development of those projects which could be positioned to replace existing facilities in the next century.

Opinions Offered During the Discussion:

- The emphasis on advanced systems and high-efficiency biased the PON toward new units rather than upgrades of existing units to facilitate life extension. The example cited to reinforce this view was that the PON provided a 15% benefit by the efficiency criterion. Consequently, it was felt that retrofits were penalized by this criterion allowing that cleanup considerations were subservient to energy considerations.

- Problems evident at this time, such as O_3 non-attainment, NO_x and SO_x, air toxics, visibility degradation, etc., will be important in the post-2000 era and should be tackled by source retrofit to affect cleanup.

- DOE should prescribe a portion of the available monies for funding retrofits and a portion for funding "future replacement" technologies in advance of the release of the solicitation.

- DOE should require a higher minimum cost-share from participants proposing retrofits than those proposing new plants.

A programmatic balance is needed to provide for both new facilities and plant upgrades as retrofits. Such balance can contribute to the overall goal of using coal-based energy systems in an environmentally acceptable manner.

Reduction of Toxic Emissions Criteria

This discussion topic, in recognizing that Title III of the Clean Air Act Amendments of 1990, may require controls on certain toxic emissions from coal processes, was aimed at soliciting input on whether to include criteria for toxic emission reduction in PON V and, if so provided, how best to evaluate them.

The question posed to the attendees was "Should DOE be looking at encouraging development of technology to control air toxics in CCT V in advance of EPA results from the three-year EPA study and promulgation of rules for air toxics?"

Opinions Expressed Included:

- Establish "extra credit" in the PON for those projects addressing reduction of toxics.
- DOE should exercise caution about providing any credit to incentivize toxics reductions because it may, unwittingly, transfer the problem from an air-based one, to a water-based one.
- How should DOE propose that data be quantified when not enough is known about the technology that should be employed?
- Monitoring of air toxics could be a problem because it may generate resistance from industry.

General Conclusions:

Because there is insufficient information about future regulatory requirements in this area, DOE should abstain from providing extra credit to those projects claiming to utilize technologies which reduce air toxics.

Carbon Dioxide Emissions and Global Warming

The question asked of the participants was "How should the fifth solicitation address carbon dioxide emissions?"

Opinions Expressed Included:

- The utilities would, at present, be unwilling to provide 50% of the funding required to affect CO_2 reduction in advance of the issuance of standards.

- Because of the fact that externality charges related to noxious emissions from coal-based power plants have been included in rulemaking by about 27 states, some provision should be made by DOE in the structure of the PON to accommodate and encourage additional coal use in those states.

- Whereas CO_2 removal from gas-fired systems is commercially available, removal of CO_2 emissions from coal-based systems is still in the "proof-of-concept" stage. The main impediment to a solution being that sulfur has to be removed before the CO_2 removal step. As such, it may be premature of DOE to incentivize CO_2 removal in the PON for CCT V. It was recognized that there are no satisfactory CO_2 disposal methods presently available.

- Because of the global warming issue, there are international pressures on CO_2 which dicatate that DOE should tackle CO_2 reductions in some capacity. Possibly by incentivizing liquid fuel forms or low sulfur feedstocks amendable to best available CO_2 reduction technology.

- Is the direct offering of incentives to reduce CO_2 emissions consistent with the program goals and objectives since the program was originally conceived for SO_2 and NO_x reductions?

General Conclusions:

It may be too early in the R&D phase to interest a utility in a cost-shared demonstration of CO_2 removal--even though the 10% R&D provision in the latest version of the statute may help.

Further, it was felt that too much emphasis on the reduction of CO_2 emissions could lock out non-utility projects in CCT V. The allowance of some extra credit for CO_2 removal--as established in PON IV--was considered to be acceptable; but any criteria establishing more dominance for CO_2 reduction may be viewed as unacceptable.

Financial Assistance Options

Discussion on this topic was sparse. However, the general consensus of the participants appeared to be that DOE's primary function in the CCT Program was not the reduction of a particular sponsor's capital obligations, or the provisions of certain credits, or price differential payments for eligible units of production, but was, rather, the concept of risk reduction through sharing in the cost of development. As such, the existing financial assistance structure would be adequate to fill the objective.

Use of "Program Income"

The topic was whether or not DOE should require the use of program income to fund project specific variable operating costs during Phase III operations. The topic had arisen because on certain projects (notably revenue generating projects) a sponsor may provide funds on the one hand--and take back from the project income pool with the other. In such circumstances, the only "real" contributor to fund project outlays during Phase III would be DOE.

General Conclusions:

In the main, the participants expressed negative sentiments toward implementation of this proposal. However, prospective sponsors of FGD projects pointed out that, because FGD retrofits et al are, for the most part, not revenue generating, they are, in effect, at a comparative disadvantage.

Perhaps the notion of providing extra-credit to those participants showing a willingness to contribute income, on a contingency basis, should be considered.

Commercial Performance Criteria Evaluation

Due to the constraints, this issue was not formally proposed for debate within the meeting. Nevertheless, some participants expressed opinions about the unfairness of the computer model, as used. Notably, DOE was questioned about the methodology it uses to compute efficiency. Moreover, it was suggested that DOE delineate its methodology in the PON for Round V. In addition, the concept of calculating efficiency from mine-mouth to end-use was proposed, rather than basing efficiency on only the particular process unit.

Program Policy Factors

The basic question here is "What, if any, changes should be made to the policy factors cited in Section 4.5 of the solicitation of CCT IV?"

Opinions Expressed Included:

- It was suggested that the problems, vis-a-vis post-2000 compliance, are more NO_x, rather than SO_x. NO_x control in nonattainment areas is an issue to be resolved by the implementation of cost effective technology, otherwise coal use would be driven out of the market and fuel switching will occur.

- The western U.S. has somewhat unique problems that should be facilitated in the PON for CCT V. For example, visibility impairment and regional haze are socio-economic problems that are very important to western states, in addition to use of low-sulfur western

coals in eastern markets for SO_2 reduction. As a result, the West needs cost effective technologies which can, to begin with, utilize low sulfur coal and then ratchet down on the emissions of NO_x, CO_2 and toxics.

- It was explained that industrial users (steelmakers in particular) are facing a serious problem with air toxics from coke production. The Clean Air Act Amendments put such onerous conditions on coke plants that many may have to close, with the resultant loss of industry jobs. For example, it was mentioned that the standards for leakage on coke oven doors will change to health based standards in about 1998. Technology to meet these new standards is not available. As a consequence, it was felt that program policy factors should change to encourage industrial users to modify plants to meet compliance requirements.

- It was suggested that the PON should be more open about the use of foreign technology. Clearly it was felt that in certain instances, (e.g., reduction in toxic emissions) foreign suppliers are essential to carrying out process goals.

- It was mentioned that, because water is such a valuable resource, particularly in the western U.S., water use efficiency should be considered in the selection of projects.

- It was suggested that DOE should address specific goals, rather than technologies, in establishing its order of priorities.

- It was advanced that DOE should emphasize the importance of the production of low sulfur liquid substitutes for imported oil.

Evaluation of Development Activities and Relative Weight Criteria

These separate topics are, in essence, adjuncts of the same question, namely "What evaluation methodology and assessment criteria is most equitable for high risk technologies, in particular the allowable testing regimes?"

General Conclusions:

Feedback on these topics was minimal; however, two basic premises summarize the sentiments of the Group:

- DOE should take another look at all issues pertinent to the establishment of its criteria. In particular, prior to the finalization of such criteria--they should be verified as consistent with DOE's statements on policy goals and objectives.

- With respect to the implementation of "extra credit" for certain socio-economic benefits, the rationale behind such credits should be clearly delineated in the PON. Additionally, these credits should be analyzed to ensure they avoid "double counting" and are consistent with all other "macro" aspects of the company.

Negotiation Issues

There were no issues raised at the meeting which warranted debate under this heading.

3.1.2 *Working Group Number 2*

Public Meeting of October 30, 1991
Cheyenne, Wyoming

Gary Friggens, Chairman
John Ruether, Co-chairman

The organizations represented at this session were as follows:

Clean Coal Technology Coalition	BHP Minerals
Wyoming Mining Association	AMAX
United Engineers & Constructors	SGI
Western Research Institute	Geneva Steel
K&M Engineering & Constructors	MSE, Inc.
Babcock & Wilcox	Carbon Fuels
Black & Veatch	MBA
Bureau of Land Management	

The Group was knowledgeable about the Clean Coal Technology (CCT) Program. About half of those present had been involved in proposing under a previous CCT solicitation. About one-quarter had previously attended a CCT public meeting. Nearly two-thirds of the group members represented technology vendors, either equipment manufacturing or consulting, while only one member represented a technology user organization.

The intent was to focus the discussions on the following general structure of discussion topics:

- Modifications to the Amount of Requested Assistance
- Objective of the Fifth Solicitation
- Reduction of Toxic Emissions Criteria
- Carbon Dioxide Emissions and Global Warming
- Financial Assistance Options
- DOE May Require Use of "Program Income" Prior to DOE Cost-Sharing
- Commercial Performance Criteria
- Program Policy Factors

- Evaluation and Development Activities
- Relative Weight of Criteria
- Negotiation Issues

Objective of the Fifth Solicitation

The first topic to be discussed was what the objective of PON V should be. Several group members felt that achieving high-efficiency was over emphasized in PON IV and expressed concern that still greater emphasis would be placed on high-efficiency in PON V. One participant stated that emphasis on high-efficiency adversely affected prospects of deployment of a technology. He argued that high-efficiency processes tend to be more capital intensive than others, and that a highly efficient process might be too expensive to be widely deployed. Furthermore, it was stated that demonstration of technologies aimed at reaching the market in the post-2010 time frame would be difficult for private industry to finance due to present worth considerations. A counter view was expressed to the effect that using current economic measures and emission standards was not sufficient to prepare coal-use technologies to compete for an energy market share in the future. The present measures do not capture all the societal costs imposed by coal use. Use by DOE of higher standards of efficiency standards and emissions, than are now required as benchmarks for new technologies, would aid in selecting coal technologies that would be competitive with other energy sources in the future.

The discussion moved to considering how industrial participation could be secured for demonstrating technologies which are not expected to penetrate the market until about 2010. One proposed solution was for DOE to fund smaller, less expensive projects by emphasizing demonstration at less than full commercial scale. Another proposed incentive was for DOE to offer a greater than 50% cost-share.

The way that efficiency was computed among the commercialization factors used in the criteria of PON IV was criticized. One participant claimed that the approach DOE had taken was too narrow, placing too much emphasis on the conversion efficiency of power plants. He stated that, to evaluate efficiency properly, DOE should consider the total efficiency from coal mine to end-user of electricity, i.e., system efficiency. If this were done, it was felt that western projects that involved new fuel forms would be more competitive in this criterion.

A further criticism of the evaluation procedure used in PON IV was made. It was stated that the way that efficiencies were computed for evaluation of commercialization potential of proposed technologies was unclear, but that the method used appeared to be oriented too much to utility applications. The participant feared that industrial projects may not have been fairly evaluated. DOE was requested to make the evaluation procedure "more transparent," either by providing the model to be used in the analysis, or to clearly explain how the data would be treated.

Carbon Dioxide Emissions and Global Warming

The issue of CO_2 emissions was discussed. It was agreed that political reality requires that the issue be addressed in the PON, either directly or indirectly, by emphasizing high-efficiency. The latter course was preferred. It was not favored to have a criterion for CO_2 emissions per se. (However, see below in suggested alternative weighting scheme.) Most did not favor supporting technologies whose purpose is to collect CO_2 from flue gas and dispose of it in the sea or deep wells, etc.

Reduction of Toxic Emissions Criteria

Air toxics were considered to be an important topic but an especially difficult one to deal with due to the limited knowledge available. It was pointed out that both of the following were largely unknown:

- The emissions/removal characteristics of many processes with respect to particular toxics.
- The relative importance (toxicity) among toxics.

It was, therefore, noted that DOE likely will not have the knowledge necessary to quantitatively treat the issue of toxics in the evaluation process. The group agreed that, because of the importance of the issue, toxics should be treated by a criterion, but that the points for the criterion should be relatively small because of the high uncertainty surrounding the subject.

One suggested approach was for DOE to list a number of references on the subject of air toxics that would give important information and that proposers should consult. Proposers would then be asked to tell DOE what they could about the emission/capture characteristics of their process with respect to particular toxics specified by DOE. DOE evaluators would base their evaluation on a qualitative judgment of the information provided.

Western Participation

The question of how to encourage more participation by proposers of western projects was considered. Two ideas were offered. One was that described above, where the computation of efficiency on a system-wide basis is considered. The other was to purposely weight more heavily those criteria where new fuel forms would rate highly, since this was thought to be the principal avenue for western coals to participate in the CCT Program.

Program Policy Factors

No new program policy factors were suggested. It was stated that program goals with respect to project selection would be achieved principally through careful crafting of the criteria. Reliance on program policy factors should be minimized.

Modifications to Amount of Assistance Required

There was no enthusiasm for the concept of DOE making selections based on a reduced project scope relative to the proposed. Doing so could be expected to cause problems in revising project financing and project content after selection. This would complicate negotiation of a cooperative agreement at best and might cause withdrawal of the proposal at worst.

Evaluation and Development Activities

There was general agreement that DOE should exercise its ability to allocate up to 10% of project cost to R&D activities, but that the subject of such R&D should be restricted. It should not be acceptable to propose to determine fundamental data concerning operability of the proposed technology. Such data should be in hand before proposing. Acceptable subject matter for R&D activities would be to improve definition of important process parameters that were already known in a general way. All other factors being equal, a proposal that did not require an R&D effort would be expected to score highest under the "technical readiness" criterion. However, a proposal that employed an R&D effort could still score well, and would certainly score better than another proposal that would profit from such an activity but did not propose it.

Relative Weight of Criteria

An alternative weighting scheme to that used in PON IV for the commercialization factors was proposed as follows:

Criterion	PON IV	Proposed
Environmental Performance at existing facilities...	15%	20%
Improved Thermal Efficiency...	15%	5%
Commercialization Approach	20%	20%
Reduction of CO_2 and toxics emissions	extra credit	5%

The Group was evenly split in its support for the two weighting schemes shown above.

3.2 THE SECOND PUBLIC MEETING

THREE WORKING GROUPS
LOUISVILLE, KENTUCKY
NOVEMBER 12, 1991

3.2.1 Working Group Number 1

Public Meeting of November 12, 1991
Louisville, Kentucky

Gary Friggens, Chairman
John Ruether, Co-chairman

The organizations represented at this session were as follows:

Central and Southwest Services
University of Tennessee Space Inst.
Air Products and Chemicals, Inc.
Gilbert/Commonwealth, Inc.
Indiana Department of Commerce
MHD Development Corporation
Environmental Elements Corp.
House Interior Appropriations
Tennessee Valley Authority
Clean Coal Technology Coalition
Energy and Environmental Research
Davy Dravo Engineers and Constructors
K&M Engineering and Consulting Corp.
Florida Power and Light
Radian Corporation
Arthur D. Little, Inc.
State of Wyoming
State of Illinois
Pedco, Inc.
Babcock and Wilcox
Turbo Power and Marine
The DOW Chemical Co.
Bethlehem Steel Corp.

The members of the Working Group represented a good cross section of technology vendors and users, as well as members from government and industry. About half the Group were technology vendors, and about a quarter were technology users, including three utilities. Over half the Group had attended a prior Clean Coal Technology (CCT) Public Meeting and about half had proposed under a prior CCT solicitation.

The intent was to focus the discussions on the following general structure of discussion topics:

- Modifications to the Amount of Requested Assistance
- Objective of the Fifth Solicitation
- Reduction of Toxic Emissions Criteria
- Carbon Dioxide Emissions and Global Warming

- Financial Assistance Options
- DOE May Require Use of "Program Income" Prior to DOE Cost-Sharing
- Commercial Performance Criteria
- Program Policy Factors
- Evaluation and Development Activities
- Relative Weight of Criteria
- Negotiation Issues

Objective of the Fifth Solicitation

As we observed at the Public Meeting in Cheyenne, there was again a split in the Group concerning the objective. A technology vendor stated that the emphasis on high-efficiency processes contained in PON IV was already too great, and that in PON V this emphasis should be reduced. Utilities and other users select technologies based on overall economics, not just high efficiency, it was argued. Thus, the PON should give greater weight to cost effectiveness. DOE was also encouraged to set criteria that would be more favorable to retrofit technologies than was true in Round IV. These technologies do not do well when high-efficiency is emphasized.

The counter argument was made by utility representatives present. They pointed out that projects selected in Round V could have no impact on Phase I requirements of the Clean Air Act Amendments (CAAA) of 1990 and might not even be completed in time to affect compliance decisions for Phase II. Thus, projects selected in Round V should help make coal a competitive energy source in the post 2010 time frame. A prime way to do this, they said, was to select technologies that had potential for high-efficiency, such as gasification/fuel cells and gasification/HAT-cycle.

Others in the session pointed out the difficulty that non-power generating technologies have in competing if high-efficiency is emphasized in the selection criteria. One speaker urged that environmental benefits should continue to be emphasized. The Group discussed how to fairly treat

technologies whose objective is to reduce different kinds of emissions. An example cited was to contrast the objectives of retrofit technologies for utilities and for coke ovens. The CAAA of 1990 makes specific requirements for SO_2 and NO_x performance for utilities, but it is not specific concerning toxic emissions. For coke ovens, control required for toxics emissions is very specific, while SO^2 and NO_x control is less of a problem. A possible solution to the problem was offered: DOE could write a criterion for "regulated emissions" without specifying any particular emission. Performance of a proposed technology, relative to a benchmark technology for the particular application, would determine the rating given the proposal for this criterion.

One speaker offered the opinion that public opposition to siting of large utility projects will have the effect that in the future, new power plants will be smaller than those of the past. He encouraged DOE to seek proposals for small (about 50 MW) power plants demonstrating new, highly efficient generation technologies.

There was general agreement that whatever criteria DOE uses to select projects, they should be spelled out in the PON with the utmost clarity. Several speakers felt that PON IV had fallen short in indicating just how important high-efficiency actually was, and that proposers only realized it after selections were announced. One speaker suggested that DOE set floors of performance for, e.g., conversion efficiency, and SO_2 and NO_x removal efficiency, for technologies that it wished to support. A potential proposer would then know whether his technology had any chance of being selected.

The Group considered how technologies that produce liquid fuels from coal should be treated. One speaker said that DOE should invite coproduction of "chemicals" from coal, not just fuels. This would include fertilizer and intermediates that could be used to produce octane enhancers or other products.

Carbon Dioxide and Global Warming

Several speakers noted that in Round IV, DOE had delivered a "double whammy" with respect to high-efficiency. "Extra credit" was given to technologies that exhibited reduced emissions for CO_2, but the technologies that qualified for this had already earned high marks for their high-efficiency. DOE was urged to eliminate this double counting. It was also expressed that "extra credit" is a less satisfactory approach to defining the technologies that DOE is seeking than is well written criteria. "Extra credit" is open-ended: the proposer does not know how many credits are available or on what basis they are awarded. It is better to use criteria with defined point values.

With one dissent, the Group believed that the proper manner for DOE to address the issue of global warming caused by CO_2 emissions is to emphasize high-efficiency, but not invite proposals of technologies whose purpose is to capture and/or dispose of CO_2.

Reduction of Toxic Emissions

See the comments above concerning the concept of using "regulated emissions" to help technologies aimed at controlling toxics in coke ovens to compete.

Concerning toxic emissions in utility applications, it was noted that EPA is only now assembling a data base as required by the CAAA of 1990. No one--EPA, DOE, nor the process developer--is fully knowledgeable about the toxics control features of many technologies. For this reason, one speaker said that DOE could not use toxics as an important element of the selection.

Another speaker countered that performance in limiting toxics emissions would be important in marketing coal utilization technologies in post-2010, the period some had said DOE should be looking toward in Round V. Even if DOE had incomplete information about toxics control characteristics of

proposed technologies and emission requirements to be promulgated by EPA, DOE was justified in using this information in selection. Furthermore, he contended that process developers know more about the toxic emissions of their technologies than they sometimes admit. Several states, including California, New Jersey, Massachusetts, and perhaps New York, require a Health Risk Assessment to be performed before permits for coal-fired projects are granted. Technology vendors are already being required to supply information on toxics emissions.

There was general agreement that DOE should use current and future projects in the CCT Program to gather data on toxics emissions.

Relative Weighting of the Selection Criteria

A majority suggested that compared to Round IV, more weight should be placed on the commercialization factors and less on the demonstration factors. This would have the effect of promoting higher risk technologies that are in an early state of development. Speakers noted another consequence of such a change, however. It is that the failure rate of projects selected could be expected to rise. It is not possible to accelerate technology development without paying a price.

Members generally agreed that economic performance should be an important element in making selections. When emissions of several compounds are being controlled by a technology, however, it is not possible to assign a cost to control a particular compound except arbitrarily. It was left to DOE to cope with this problem. However, whatever means DOE decides to use to evaluate cost effectiveness should be explained clearly in the PON.

Program Policy Factors

A recurring area of disagreement at the Public Meetings has been the relative importance DOE places on developing long lead time, high-efficiency, high-performance technologies versus technologies that will find application in retrofitting or repowering existing facilities. It was suggested that program policy factors in PON V could be expanded to assure the balance between these two classes of project.

It was also pointed out that with passage of the CAAA of 1990, the need to give special attention to near-term reductions of SO_2 and NO_x emissions diminished. If continuation of the program policy factor addressing this issue is no longer necessary because of legislation, consideration should be given to dropping it.

Evaluation of Development Activities

DOE was cautioned to take care not to select proposers who wish to use the available 10% of project funds for a development activity but do not intend to complete the project. To avoid this, DOE should look for evidence of commitment to follow through with the demonstration project. DOE was asked to provide guidelines as to what kind of work would be acceptable for inclusion in a development activity. It was suggested that DOE should evaluate proposed demonstration activities within the structure of the existing evaluation criteria.

3.2.2 Working Group Number 2

Public Meeting of November 12, 1991
Louisville, Kentucky

Gary Voelker, Chairman
Rita Bajura, Co-chairman

The organizations represented at this session were as follows:

Carlow Group Companies
Tennessee Valley Authority
Westinghouse Electric Corp.
Michigan Consolidated Gas Co.
Consolidation Coal Company
Electric Power Research Institute
U.S. General Accounting Office
Central Illinois Light Company
United States Cement Company
Clean Coal Technology Coalition
Armco Research & Technology
G. Blackmore, Inc.
Radian Corporation
Pure Air
Central & Southwest
Babcock and Wilcox
Geneva Steel
Dow Corning Corp.
Pacific Rim Services
Electric Energy, Inc.
Joy Environmental Technologies Company
Allison Gas Turbine Division General Motors Corporation
Commonwealth of KY, Governor's Office, Coal & Energy Policy
University of N. Dakota Energy & Environmental Research Ctr

Approximately 25 participants attended Working Group Number 2. The participants included representatives from equipment suppliers, utilities, architect & engineering firms, and research organizations as well as the coal mining, coal processing, steel, and cement industries. Most of the participants were familiar with the Clean Coal Technology (CCT) Program because they either submitted proposals in response to previous CCT solicitations or attended previous public meetings on the CCT Program. The following topics were addressed in the Working Group:

- Objective of the fifth CCT Solicitation (CCT V)
- Modifications to the Amount of Requested Assistance

- Reduction of Air Toxic Emissions Criteria
- Carbon Dioxide Emissions Criteria and Global Warming
- Use of Program Income
- Commercial Performance Criteria Evaluation
- Program Policy Factors
- Evaluation and Development Activities
- Relative Weights of Criteria

The sections below discuss each of these topics.

Objectives for the CCT V Solicitation

Participants were strongly divided on the appropriate objective for the CCT V solicitation. A majority of the participants felt that CCT V should focus on high-efficiency technologies that could be commercialized in the post-2000 time frame. A minority felt that SO_2 and NO_x emission reductions should be emphasized. A strong environmental focus would allow demonstrations of economic retrofitting technologies. These technologies could be used by the large inventory of existing power plants to meet Phase II compliance of the Clean Air Act Amendments (CAAA) of 1990.

A majority of the participants agreed that the scope of the solicitation should include a broad-range of utility and industrial technologies for both new and retrofit applications. They felt that industry should decide on the technologies it wants to develop and commercialize. However, some felt that DOE should earmark funding for various classes of technologies in the solicitation.

Modifications to the Amount of Requested Assistance

Generally, DOE should not unilaterally change the amount of requested assistance. This, in essence, changes the scope of the proposed project. The industrial sponsors felt they needed to play the lead role in the formulation of a project. However, it was recognized that Government procurement regulations allow a Source Selection Official to select all or part of a proposed project.

Reduction of Air Toxic Emissions Criteria

Air toxic emissions generated a lively debate. In general, the utility industry felt that air toxics should be considered in the evaluation criteria. However, air toxics should not have a separate evaluation criteria because they are not currently regulated. Representatives from the steel industry felt that more emphasis should be placed on air toxics. They are concerned about meeting a 1998 air toxic emission deadline imposed by the CAAA of 1990. A compromise for the evaluation of environmental performance was developed. In the compromise, environmental performance for SO_2 and NO_x removal would receive up to 15 points of credit in the technical evaluation. In addition, up to 15 points credit would be granted for reduction in air toxic emissions. However, the total allowable points from these two emission categories would be capped at 20 points.

Carbon Dioxide Emissions Criteria and Global Warming

Most of the participants felt that DOE should continue to grant extra credit for CO_2 emission reduction. The amount of extra credit should be identified in the solicitation. The CO_2 criteria should deal with emission reduction, not processing for sequestering CO_2. A minority felt that CO_2 reduction should not be given extra credit. The logic was that extra credit "double counts" efficiency improvement.

Use of Program Income

Currently project sponsors are not expected to credit revenues generated during the operating phase against the project operating costs. The Group felt that this was a reasonable approach and should be continued. Because demonstration plants are smaller than commercial size and need to conduct a range of test runs, they rarely, if ever, are profitable. Thus, there is little chance a proposer could accrue windfall profits during the operating phase. Obligating operating revenue to the overall project is a financial disincentive to bidding on the solicitation.

Commercial Performance Criteria Evaluation

In the CCT IV Program Opportunity Notice (PON), DOE granted equal weight to technical criteria and commercialization criteria. After considerable debate, the majority felt that this balance is appropriate and should be used in the CCT V PON. To encourage non-utility projects, DOE should evaluate efficiency and environmental performance in comparison to baseline cases in the same industry.

There was general agreement that DOE should make the cost of electricity (or cost of product for industrial systems) an evaluation criteria. This cost criteria should be applied against the commercial embodiment of the proposed project to ensure that cost effective technologies are selected. Pre-combustion processing of eastern or western coals was offered as a specific example of a potential cost effective approach to reducing SO_2 and particulate emissions as well as coal transportation costs.

Program Policy Factors

DOE needs to clearly state the objectives of CCT V in the PON. This information allows potential proposers to place program policy factors into context. Thus proposers can "self-select" and propose projects that they feel best meet the objectives.

Evaluation and Development Activities

Congressional direction for CCT V recommends that DOE allow up to 10 percent of the total project cost to be spent for cost-shared developmental activities at an existing pilot plant. The Working Group participants were asked for recommendations on incorporating developmental activity into CCT V. The Group felt that the 10 percent developmental fund should be used only for confirmatory work. It should not be used to subsidize projects that are still at the R&D stage of development. The projects proposed in CCT V should be

viable in themselves. In CCT V, DOE should use the same technical readiness criteria that was used in CCT IV.

The majority felt that it would be appropriate for the developmental activity to take place at off-shore pilot plants if it could be shown that this approach had quantifiable benefits to the U.S. A minority felt that DOE should only fund developmental activity located in the U.S.

Relative Weights of Criteria

A majority felt that the weighing factors applied to the efficiency criterion should be kept the same as in CCT IV or increased. A minority strongly disagreed and cautioned against giving extra credit for CO_2 emission reductions on the basis that this further emphasizes efficiency improvement.

DOE needs to maintain a balance in evaluating the technical readiness of a particular technology for a demonstration project. The objective of the CCT Program should be to reduce the private sector's financial risk of demonstrating promising new technologies. The CCT Program should not be used to subsidize commercial deployment of a technology.

3.2.3 Working Group 3

Public Meeting of November 12, 1991
Louisville, Kentucky

Joe Strakey, Chairman
Stewart Clayton, Co-chairman

The organizations represented at this session were as follows:

Abdelmalek & Associates	Inside Energy
National Coal Association	Illinois Power Co.
Gilbert/Commonwealth, Inc.	U.S. GAO
Kentucky Public Service Commission	CQ, Inc.
Allied Signal Inc. Aquatech Systems	TraDet, Inc.
Aerological Research Systems, Inc.	Babcock & Wilcox
Korf Lurgi Steeltec, Inc.	Air Products
Energy Resources & Logistics	Stone & Webster
The University of Tennessee Space Inst.	Westinghouse
Combustion Engineering	Radian Corp.
Natural Res. and Env. Protection Cabinet	

Working Group Number 3 was comprised of 22 participants and included a diverse mix of representatives from utilities, architect/engineering companies, equipment manufacturers, steel industry, technology developers, universities, state government, government oversight agencies, and the news media.

The intent was to focus the discussions on the following general structure of discussion topics:

- Modifications to the Amount of Requested Assistance
- Objective of the Fifth Solicitation
- Reduction of Toxic Emissions Criteria
- Carbon Dioxide Emissions and Global Warming
- Financial Assistance Options
- DOE May Require Use of "Program Income" Prior to DOE Cost-Sharing
- Commercial Performance Criteria

- Program Policy Factors
- Evaluation and Development Activities
- Relative Weight of Criteria
- Negotiation Issues

Modification of the Amount of Requested Assistance

This topic was predicated upon the fact that, in certain instances, respondents to the CCT IV round included within the scope of the project (i) features that were not germane to fulfilling the goals of the Clean Coal Program, (ii) duplicative systems and/or equipment that benefitted plant upgrade considerations rather than improving the reliability of clean coal demonstration, (iii) were at a scale larger than that deemed necessary for adequate demonstration of the technology.

Opinions of attendees on this topic included:

- In cases where the proposed project includes a "new application" of existing technology, as opposed to a "new technology project," DOE should be positioned to negotiate with the proposer over the overall programmatic merits before settling on a funding support level. Consequently, a procedure that would enable DOE to provide a counter offer should be enacted.

- Because the objective here is to reduce the amount of the DOE portion of project funding, DOE should address the issue by providing an additional incentive for lower requested amounts in the criteria.

- An argument against the suggestion cited above was that often new power cycle technologies require grassroots development. As a result, this type of configuration would be penalized, as compared to retrofits, by the application of additional incentives for lower DOE amounts of financial assistance.

- Another point of view was that the onus of responsibility for packaging a project is on the proposer. As such, DOE should accept or reject the project as proposed, rather than attempt to segregate certain systems or components on the basis of redundancy or because they may not be considered germane to the demonstration.

General Conclusions

DOE should either explain its least size and least cost requirements on the demo configuration, and provide commensurate incentives under its criteria, or else, DOE should only evaluate and select projects on an "as proposed" basis.

Objective of the Fifth Solicitation

As was the case in the first public meeting in Cheyenne, this topic received a divided response between those parties favoring the retrofit and upgrade of existing plants to facilitate life extension, and those favoring a focus on improving decision options for new or replacement plants in the 2010 time frame and beyond.

Opinions offered during the discussion included:

- Focus of CCT V should be toward major step-wise advances in evolving technologies to improve both the efficiency of operation and environmental performance for both utilities and industry. It was felt that this was the only program available for industry to develop, with government assistance, the improvements that are long overdue. Moreover, it was suggested that both industry and the utilities have the interest and the resources necessary to implement projects utilizing innovative technologies.

- Utilities have developed a conservative decision making philosophy because of the regulatory environment. As a result, CCT V should be directed to assist the utilities with their post-year 2010 decision options helping to bridge the "technology gap."

- It was suggested that there are a "wide range of legitimate technologies which need funding" but that, hitherto, DOE has favored the development of existing technologies. On this occasion, the emphasis should be on providing incentives to those willing to develop demo projects utilizing novel technologies.

- Projects which address the future needs of industry, should be part of the focus of CCT V. The private sector looks principally at efficiency of operation, overall economics and environmental attributes of a project in its assessment of viability. However, the industrial sector has to contend with unfavorable "economies of scale" as compared with utilities (say 200 MW rather than 1,000 MW). As such, DOE should be more flexible in its treatment of commercial efficiency estimations to accommodate those technologies of intrinsic value to industrial users.

- A certain amount of funds should be made available to demonstrate existing technologies targeted to improving the operation of existing systems with advancements in compliance standards. It was felt that the utilities and industry need a positive indication that the government is interested in retrofit in order to continue to submit proposals. It was deemed correct that CCT V focuses on the "last step" to full commercialization-other programs are available to fund R&D efforts.

- It was suggested that DOE pay extra attention to demonstration aimed at improving cyclone boiler NO_x control and Selective Catalytic Reduction technologies which specifically address provisions of the Clean Air Act Amendments. It was further suggested that DOE

"step back" and re-assess whether or not it was addressing the real needs of coal-burning utilities as they relate to the Clean Air Act.

- Because coal use is important to coal producing states, a view was provided that such socio-economic considerations necessitate that retrofitting should continue to be an integral part of the program. Therefore, DOE should provide that "displacement of people" criterion be considered as well as least cost criterion.

- An opinion was expressed that CCT V should provide a clear focus for the development of a project to demonstrate coal-based liquid fuels. It was felt that the major hurdle to coal-liquids is plant capital requirements and the cost-sharing provisions under the Clean Coal Program alleviate this to a considerable extent. The proponents of liquid fuels stated that large, single train units are preferred for demonstration-probably in the 1500-2000 TPD of coal throughput. Further, it was felt that any development of liquid fuels should not be constrained by targeting at the transportation fuels market-but should be more flexible. It was suggested that coal liquids could be competitive with oil in the $30-35/bbl range.

- Certain participants believed that there was still a need, under CCT V, for additional pre-combustion process development projects. Such belief was founded on the premise that the efficiency of SO_2 reduction (measured on a dollars/ton of removal basis) is much higher by the front-end dewatering and coal restructuring than that afforded by post-combustion clean-up processes. Additionally, such pre-treatment would probably yield a coal-based product that would be attractive in certain export markets (Europe and Asia), and this would result in additional economic benefits to the U.S.

General Conclusions

A programmatic balance is required which address both the needs for new, more efficient technologies, as well as those for plant retrofits. With respect to liquid fuels, the participants concurred, in general, that liquid fuels be solicited for under CCT V but that they should by no means be the major focus.

Reduction of Toxic Emissions Criteria

This discussion topic, in recognizing that Title III of the Clean Air Act Amendments of 1990 may require controls on certain toxic emissions from coal processes, was aimed at soliciting input on whether to include criteria for toxic emission reduction in PON V and, if so provided, how best to evaluate them.

The question posed to the attendees was "Should DOE be looking at encouraging development of technology to control air toxics in CCT V in advance of EPA results from the three-year EPA study and promulgation of regulations for air toxics?"

Opinions Expressed Included:

- Some of the participants felt that the issue of air toxic mitigation may be of more importance than CO_2 reduction in the long run, and that some credit should be provided under the PON guidelines for reduction in air toxics.

- Notwithstanding the opinions expressed above, the participants did, in general, concur that air toxic control technology should not be a separate category or a program policy factor.

General Considerations

In any case, it was believed that any incorporation of toxic reduction technologies may be premature because (i) EPA has not promulgated regulations affecting air toxics, and (ii) air toxic reduction technology is not yet mature and may not be ready for demonstration.

Carbon Dioxide Emissions and Global Warming

The question asked of the participants was "How should the fifth solicitation address carbon dioxide emissions?"

Opinions Expressed Included:

- The utilities are reluctant to cost-share in programs to remove CO_2 from combustion products in advance of the issuance of standards.

- It is premature to give too much credit to CO_2 removal at this point. What is required first is a basic research program to address CO_2 impact on the environment.

- Efficiency is the most feasible mechanism available to address CO_2 reductions since improvements in efficiency is desirable, per se.

General Conclusions:

Because there is insufficient information about future regulatory requirements in this area, DOE should not be positioned to provide additional credits to CO_2 removal. The credit provided to efficiency improvements encompasses the concept of CO_2 reduction.

Use of "Program Income"

The topic was whether or not DOE should require the use of program income to fund project specific variable operating costs during Phase III operations. The topic had arisen

because on certain revenue generating projects the only "real" contributor to variable operating costs would be DOE because the Sponsor's "contribution" can often be derived from the sale of products, and these revenues are not shared with DOE.

General Conclusions:

Overall, the proposal that DOE require the use of program income received little support from the participants. However, in order to underscore the importance that DOE places on the level of sponsor support, DOE should provide "extra credit" to those willing to fund a greater share of project costs.

Program Policy Factors

The basic question posed here is "What, if any, changes should be made to the program policy factors cited in Section 4.5 of the solicitation for CCT IV?" These factors are used to achieve programmatic balance between technologies, applications, etc.

Opinions expressed included:

- It was suggested that DOE should issue a "Statement of goals and objectives" as a precursor to issuance of the PON. This would enable would-be proposers to structure a project in accordance with DOE's stated goals.

- It was expressed by certain participants that prior solicitations had been "skewed" in favor of utilities, and that CCT V should redress the balance by providing more programmatic encouragement for industrial projects. This could be facilitated, for example, by ensuring that industrial projects that use coal efficiently, at a pragmatic scale, are not penalized, vis-a-vis utilities, from a scale factor perspective.

- The PON should not discourage the use of foreign technology in projects, especially in instances where it can be shown that such technology is functionally optimum. At a minimum, the PON should be specific about what rules govern, if any, with regard to U.S. content on projects.

Evaluation and Development Activities

In view of Congressional action providing that DOE may cost-share development work to a maximum of ten percent of the government's cost-share, the question posed the participants was, "What evaluation methodology and assessment criteria would be most equitable for projects wherein developmental activities would precede demonstration?"

Opinions expressed included:

- The proposal should succinctly show the linkage between project development activities and the proposed demo project. In the PON, DOE should underscore the importance of showing that the test work contemplated is an intrinsic adjunct to the demo project.

- DOE should prescribe particular eligibility requirements in the PON to indicate what kind of design verification testing would be funded and what may not be allowable.

- DOE should require the proposer to provide in the proposal its rationale to demonstrate how the development activities will address (i) new technology risk mitigation and (ii) increase the probability of commercial success.

- DOE should require that decision points be implemented so that projects which don't make "satisfactory progress" by such measure may fail by mutually understood criteria. As a result, DOE should envisage projects requiring these front-end verification tests to have longer schedules.

- DOE should consider providing a specific amount of funds for a separate category, such as, "novel technology group" so that projects which don't require test work may compete for known available funds.

Relative Weighting of Criteria

Opinions expressed included:

- A suggestion was made that finance/cost criteria carry more weight under CCT V than in IV, where it accounted for a total of 25%. The logic applied here was that a proposer's willingness to commit funds to a project is, in essence, a testament to its (and its lenders') determination that the technology is "technically ready" to perform as configured in the project. The way it is structured at present, DOE is putting more weight on its technical evaluators' ability to assess the technical readiness than the proposers' own technical experts or its investment bankers. Notwithstanding, the participants were generally favorable to the prevailing weights.

Other Issues

- DOE was strongly encouraged to speed up the NEPA approval process, which the participants feel is somewhat cumbersome as structured. DOE explained that it is working to improve the review process and that, in fact, some streamlining has been achieved. It was noted that the process is, by nature, long and that proposers should expect and plan for some delay. One way in which delays can be minimized is by the adoption of a team concept by all players in the process.

Commercial Performance, Financial Assistance Options and Negotiation Issues

- There were no issues raised at the meeting, which warranted debate under these headings.

CHAPTER 4

WRITTEN COMMENTS RECEIVED IN RESPONSE TO THE MEETING NOTICE

4.1 EXPLANATORY NOTE

The notice of the public meetings that appeared in the *Federal Register* on September 23, 1991, included a provision for the submittal of written comments by individuals who were not able to attend in person.

Written comments were received from a diversity of interests, including private industry, electric utilities, special interest groups, and government entities. In the summary comments that follow, DOE has deleted all references to names, titles, organizations, etc., in order to confer anonymity on parties who may not wish to be identified, and also to permit suggestions and expressions of concern to be considered on their own merits.

Section 4.2 categorizes the principal views expressed in the written comments. Verbatim excerpts from the letters received are provided.

4.2 SUMMARY HIGHLIGHTS OF THE VIEWS EXPRESSED IN THE WRITTEN COMMENTS

Global Climate Change

Priority should be given to technologies which will address global climate change concerns. This is the area of technology that has been least advanced, and one of those which the U.S. Environmental Protection Agency's Science Advisory Board has identified as a significant risk for the future. Preference should be given to technologies which reduce emissions of greenhouse gases, both in the combustion process and with end-of-pipe controls. In fact, all project solicitations should be required to address the effects of the proposed technologies on greenhouse gas production.

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Since there is so much uncertainty about global warming at this time, its possible magnitude, causes, and control, it appears prudent to encourage low cost efforts to reduce emissions while waiting to focus major research on potential control strategies until the problem is better defined.

Setting Direction Beyond CCT Program

An effort such as the CCT program must be forward-looking, and given that this is the last solicitation, it should be oriented towards giving the next generation of environmental concerns a start, setting the direction of research efforts that go beyond this program.

Objectives of the Solicitation

Environmental performance at existing power generation facilities should focus on development of integrated systems for controlling SO_2, NO_x, CO_2, and toxic emissions, rather than end-of-pipe controls. Projects selected during the previous CCT solicitations appear to adequately cover these technologies (e.g. flue gas desulfurization).

DOE should be looking at production of gaseous as well as liquid fuels for transportation.

Environmental performance for coal processes should include all environmental media, not just air pollution control. Solid waste production and water quality effects should also be addressed.

Toxic Emissions

Reduction of toxic emissions should definitely be a criterion for selecting projects for funding. Coal burning is a major source of toxic air emissions, especially metals. Emissions of primary importance include mercury, arsenic, chlorine, and formaldehyde. Other metals to consider include vanadium, manganese, chromium, selenium, nickel, beryllium, cadmium and copper. This too is an emerging issue which would benefit from measures to advance the state of control technologies. This may not be as urgent as addressing greenhouse gases, as current federal and state legislation will drive the development of technologies to comply with legal requirements.

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The interest in addressing toxic emission from power plants is understood, however Title III of Clean Air Act Amendments (CAAA) Sect. 301 (n) (1) (A) calls for the EPA to conduct a three year study of the public health hazards related to electric utility emissions. The results are to be reported to Congress in late 1993. Since the purpose of EPA's study is to determine what, if any, regulation of toxic air emissions is necessary, it would be premature to fund studies prior to evaluation of the results of EPA's report to Congress. It seems far more time and cost effective to wait to see if any regulation is deemed necessary, and if so, focus research efforts on those specific toxics needing regulation. It should also be noted that a specific comprehensive study of mercury is already required by the CAAA.

Relative Weighting of Criteria

Since the goal of the fifth solicitation will be to "significantly advance the development of coal ...technologies to ensure that coal can be used to meet the nation's future energy needs in the most efficient, economic, and environmentally responsive manner possible.", the relative weighting of the criteria could be changed to directly reflect this goal.

Retrofit/Repowering Technologies

Developing ways to reduce adverse impacts of coal-based energy generation in an economical manner is important given the number of older plants operating now. The utilities need incentive to change their technologies of choice, and their modes of dispatch to favor cleaner units. Developing cost-effective retrofit, or repowering technologies provides more impetus to upgrade or retire older, dirtier units. The 1990 Clean Air Act Amendments provide the stick to force compliance, programs such as the CCT Demonstrations help to make the changes more palatable.

An International Team Effort

Having established the position of coal in the 'energy' ratings, and having conclusive proof that the present uncontrolled burning of millions of tonnes per annum is detrimental to the human race and the planet, it is not difficult to deduce that if we intend to continue using this form of energy, we must find ways and means to convert it from the solid to pure useable energy with as little side-effect as possible - and that such research should be universal, a team effort no less, there is no time for individual solutions. An international team is what is needed, with contributory funding from the nations with the majority interests in end-use for coal. Scientists tell us that a single solution is the most probable answer, if that is so, nations should contribute their know-how and funds to establishing that solution with a minimum of delay.

The U.S. CCT Programme has illustrated that a government/ industry co-funded operation can work, and that full-scale 'showcase' facilities are feasible. Time is the single component that cannot be condensed, and a ten year span for the production of commercially viable technology may indeed prove to be the Achilles heel!

If a combined nations project can be launched, and the time taken to arrive at a viable solution reduced by an appreciable amount, then it will be well worth while, and universally advantageous.

APPENDIX I

CHEYENNE MEETING ATTENDANCE AND TRANSCRIPTION

CHEYENNE REGISTRATION

Name	Company	Mailing Address	Telephone
A. Alan Ayria, Business Development Manager–Power	Fluor Daniel, Inc.	3333 Michelson Drive Irvine, California 92730	(714) 975–4881
George Bartholomew Director, Communications & Government Relations–Wyoming	Basin Electric Power Cooperative	MBPP Project Office 1560 Johnston Street Wheatland, Wyoming 82201	(307) 322–9121
Lee Brecher Vice President, Engineering	Western Research Institute	P. O. Box 3395 Laramie, Wyoming 82070	(307) 721–2244
Ronald L. Claussen, Manager Energy Supply Projects	United Engineers and Constructors	5555 Greenwood Plaza Blvd. Englewood, Colorado 80111	(303) 843–2604
John B. Doyle, Sales Engineer	Babcock & Wilcox Power Generation Group	7401 W. Mansfield Avenue Suite 410 Lakewood, Colorado 80235	(303) 988–8203
Alan Edwards, Natural Resources Analyst	Governor's Office	Herschler Building, 4th East Cheyenne, Wyoming 82002	(307) 777–7574
Sam H. Esleeck, Manager, Washington Liaison	Babcock & Wilcox	1850 K Street, N.W., Suite 950 Washington, DC 20006	(202) 296–0390
Gerry Funk, Manager	MSE, Inc.	P. O. Box 3767 Butte, Montana 59702	(406) 494–7234

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Name	Company	Mailing Address	Telephone
Michael D. Godfrey Engineer, R&D	Allegheny Power System Bulk Power Supply	Cabin Hill Greensburg, Pennsylvania 15601	(412) 838-6499
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Robert Gunn	University of Wyoming	5905 Bill NYE Laramie, Wyoming 82070	(307) 742-4426
Gail Hendrickson	Clean Coal Technology Coalition	1050 Thomas Jefferson St., NW Washington, DC 20007	(202) 298-1893
Elizabeth A. Hobbs, Reporter	KGWN TV 5	2923 E. Lincolnway Cheyenne, Wyoming 82001	(307) 634-7755
Mahesh C. Jha Manager, Energy R&D	AMAX Research and Development Center	5950 McIntyre Street Golden, Colorado 80403-7499	(303) 273-7284
Ken C. Johnsen, Manager of Special Projects	Geneva Steel	10 South Geneva Road Vineyard, Utah 84058	(801) 227-9321
Eugene A. Jonart Wyoming Coal Coordinator	U.S. Department of Interior Bureau of Land Management	Wyoming State Office P. O. Box 1828 Cheyenne, Wyoming 82003	(307) 775-6250

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Alex B. Komoroske, President	Pacific Rim Services	932 Santa Cruz Avenue, Suite E Menlo Park, California 94025	(415) 322-7991
Marion Loomis Executive Director	Wyoming Mining Association	1700 West Lincolnway P.O. Box 866 Cheyenne, Wyoming 82003	(307) 635-0331
Michael Lukasik, Manager, Fossil Contracts-Proposals	Babcock & Wilcox Contract Research Division	1562 Beeson Street Alliance, Ohio 44601	(216) 829-7577
Robert E. McDonald Project Manager	Stone & Webster Engineering Corp.	7677 East Berry Avenue Englewood, Colorado 80111-2137	(303) 741-7424
Michael M. Marquardt, Process Implementation Coordinator	SGI International	La Jolla Financial Building 1200 Prospect, Suite 325 La Jolla, California 92307	(619) 551-1090
Marshall Mazer, Manager, Government Programs	Bethlehem Steel Corporation	1170 8th Avenue, Room 1739 Martin Tower Bethlehem, Pennsylvania 18016	(215) 694-2389

CHEYENNE REGISTRATION

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Charles Pelkey	Casper Star Tribune	255 North 8th Laramie, Wyoming 82070	(307) 745-6345
Dee Rodekohr	Senator Simpson's Office	2007 Federal Building Cheyenne, Wyoming 82001	(307) 772-2477
Robert E. Schmidt, Manager, Contracts-Proposals	Babcock & Wilcox	P. O. Box 11435 Lynchburg, Virginia 24506-1435	(804) 522-6807
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Name	Company	Mailing Address	Telephone
Dave Still, Manager of Central Region	Black & Veatch	8400 Ward Parkway Kansas City, Missouri 64114	(913) 339-7162
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Don C. Vymazal, Manager, Contract Administration	Pure Air	7540 Windsor Drive Allentown, Pennsylvania 18195	(215) 481-3687
Kendrick W. Wentzel Manager of Projects	K&M Engineering and Consulting Corporation	2001 L Street, N.W., Suite 906 Washington, DC 20036	(202) 728-0390
Ben Yamagata	Clean Coal Technology Coalition	1050 Thomas Jefferson St., N.W. Washington, DC 20007	(202) 298-1893
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UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

PUBLIC MEETINGS FOR VIEWS AND COMMENTS ON THE CONDUCT OF THE 1992 CLEAN COAL TECHNOLOGY SOLICITATION

CHEYENNE, WYOMING
OCTOBER 30, 1991

APPEARANCES:

JACK S. SIEGEL
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DEPUTY ASSISTANT SECRETARY FOR COAL
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P R O C E E D I N G S

(On the record at 9:01 a.m.)

MS. LERCH: Good morning. My name is Jean Lerch. I'm with the Office of Coal Technology. I'd like to welcome everyone and thank you for attending, especially in light of the weather that we have out there this morning.

This is going to be the first of two public meetings of the Clean Coal Technology Program in preparation for the fifth solicitation. Our second meeting will be held in Louisville, Kentucky, on November 12th. The purpose of the meeting today is to invite your views and recommendations on the solicitation, and your input will be provided to the Source Evaluation Board which is responsible for putting together the solicitation, and, in addition, your comments will be provided to the policymakers at the Department for their consideration in providing guidance on the solicitation.

We want to make sure that this program responds to the needs not only as those in Washington see them but, more importantly, the

needs as you see them. You may know the Conference Report dated October 17, 1991, which makes appropriations for the Department of Interior and Related Agencies provides that a general request for proposals be issued not later than July 6th of 1992, with projects selected on or before May 6th of 1993. There will be a five month period for the proposers to prepare their proposals and submit them to DOE, and in turn, DOE will have five months to evaluate those proposals and make selections.

We will begin this morning with a short plenary session which will be followed by working groups. We will break into two working groups which will be moderated by DOE officials. You will have the opportunity at that time to state your views, have them debated and the Chairs and Co-Chairs will note them. And, following this afternoon's session, the Chairs will summarize discussions and then open the floor for questions.

At this time I would like to introduce Jack Siegel, Deputy Assistant Secretary for Coal Technology. Jack has responsibility for the Clean Coal Technology Demonstration

Program as well as the Coal Research and Development Program. Jack.

MR. SIEGEL: Thank you, Jean, and good morning. This is quite a change from the weather we've had back in Washington. Just last weekend we were out in our shorts mowing our lawns and we come to Wyoming and the snow, which is great. We all love snow.

What I'd like to do is just give you a brief status report on the Clean Coal Program and for those of you who aren't familiar with it to give you a little bit of information on the Program itself, and then to set the stage for the break-out sessions by talking about the objectives, at least as they have been defined so for, for Round Five, and what Congress seems to be telling us, although Congress isn't done with their deliberations yet, but what Congress is telling us with respect to where we go with Round Five as well.

Firstly, I just wanted to put a plug in for the National Energy Strategy. The National Energy Strategy was prepared by the Department of Energy at the request of

President Bush and published earlier this year. The Strategy covers a whole variety of fuels and markets and technologies, but this chart focuses on the coal aspects of the National Energy Strategy.

Basically what the Strategy says is that coal is going to be an important fuel for the United States and the world to be using well into the 21st Century, but that for coal to meet its future energy needs we're going to have to advance technology. We're going to have to advance technology to ensure that coal remains economically competitive and, most importantly, is able to be used in an environmentally acceptable way. So that's what the Clean Coal Technology Program is, and the centerpiece of the coal section of the National Energy Strategy deals with clean coal technologies.

In addition, there are several other activities that are called for in the National Energy Strategy. The Strategy right now is being debated on Capitol Hill and hopefully before long we will have a piece of legislation passed by Congress and approved by

the President for carrying out that Program.

With respect to the Clean Coal Technology Program itself, I probably don't need to tell you since most of you have been involved in one way or another in the Program already, the goal is to make available to the marketplace information, data on advanced coal utilization technologies, so we could take these technologies and commercial users can have data upon which to base their decisions for the future.

Clean coal technologies, for those of you who don't know, are a wide variety of things for a wide variety of applications: they're technologies that do a lot of things in the power-generating area; they control emissions associate with coal, sulfur dioxide, nitrogen oxide, maybe toxics, produce marketable wastes or at least easily disposed of wastes, and can be used for other purposes as well. They Can be converted into liquids for transportation applications or can be used in industrial, commercial, and residential applications -- broad-ranging view of what clean coal technologies are.

The Clean Coal Program is a cooperative effort between government and industry. Government provides financial assistance, recognizing that these technologies have some degree of risks associated with them and risk capital is very difficult to come by. The Federal government helps to reduce the financial risks by providing financial assistance.

The industrial participant is the one responsible for the project and the technology, and they carry out the project and they bring that technology into the commercial marketplace. We monitor the project. We make sure that the taxpayers' money is being spent appropriately. We make sure that data that are needed in the public sector from these projects are out in the public sector, but the industrial participant really controls the intellectual property that comes out. Of course there's no incentive in this Program for you if you put in 50-percent of the cost of these projects and then we take all the information, including the intellectual property, from this Program and share it with

your competitors, so we don't do that. The intellectual property is yours; we just share the cost of risks and we do get some return on our investment if your technology is successful and if you do make commercial sales of your technology.

With respect to the funding of the Program, overall the Federal Government will provide about $2.75 billion matched by private industry, at least 50/50 cost sharing. Up until now we've had in excess of 60-percent cost sharing from private industry in this Program. We have just completed the fourth round of the Program. The funding distribution, as shown here on this chart, may have changed. I think Congress is changing the funding some, for budgetary reasons, but it will not affect the pace of the Program. We don't really need all the money in Fiscal Year 1992 in order for us to carry out the Program.

The Program is carried out in five phases. This is the general schedule for it, although, as Jean has mentioned, it appears that Congress is going to tell us that with

respect to Clean Coal V we're to issue the solicitation in July of '92. I think this chart shows February or March of 1992. The Program is a Program of pretty long duration. Of course you don't build these plants overnight and you don't operate them overnight, some of them extend for a long period of time. So we expect that we are not going to have all of the data out of this Program until around 2003, 2004 time frame, but we'll have an awful lot of information between now and then.

Current status of the Program is, and this is a difficult chart to read so let me walk you through it very quickly. It shows you for Rounds I, II, III, IV the number of proposals that were received, the number of projects. These are actual projects that have cooperative agreements under each of the rounds. And, as you can see, we have 42 projects currently as a part of the Program. You can see the funding level, how much money the Federal government is putting in and below how much money the participants are putting in the Program. And, as I mentioned, in excess

of 60 percent of the funding so far in the Program has come from the private sector. We didn't put in the funding for Round Four yet because those projects are just starting negotiations and that funding level won't be fully known until after we complete negotiations.

The projects that we have in the Program, the 42 projects, are located most everywhere throughout the country; I think in 22 states, if I'm not mistaken. You can see here for Round One their distribution and the names of the projects. And, by the way, out on the table in the front is a lot more information on the individual projects and the Program itself. So, to the extent that you have any needs for information on the projects in the Program, that information will provide it for you.

In Round Two, which was primarily an acid rain control round dictated by Congress, you can see most of the projects, all the projects located in the eastern United States.

Round Three we expanded the Program to

include technologies that are of more interest to the West, and you can see that we had a lot of projects distributed all over the country in Round Three, and in Round Four as well. The dots are a little misleading. One project is being conducted at three sites in the East, but you can see a pretty good distribution of these projects throughout the country.

We have a wide variety of technologies that are now a part of this Program: Several power-generating technologies; several combined circulating fluidized-bed combustors; pressurized fluidized combustors; combined cycle gasification technologies, as well as a couple of advanced combustors; a number of pollution control devices; a number of new fuel forms, coal preparation and industrial processes. Almost every one of these technologies has applicability to the wide variety of coals that exist in the United States. The fact that they are demonstrated in the East doesn't mean that the technology is only applicable to the use of high sulfur coals, that's not the case at all.

This information is just a summary of the

last chart now with some names of projects included in them, and I won't go through them in any great detail but will just flash up the charts for you. All this information is in the materials that are provided to you.

A status report on the Program. I mentioned we have 42 projects in the Program. You can see that in the lower right-hand corner of this chart. This chart shows you, by round, where the projects are in the process, how many are currently undergoing negotiations and, as you can see under Clean Coal IV, every project, the nine projects we just selected, are all being negotiated right now. One project left over from Round Three that's still being negotiated.

We've got 10 projects in design; 12 projects in construction; 8 projects in operation; and 2 have been completed. So the Program is moving along now very, very aggressively. Actually better than any of us had hoped for when the Program first started about five or six years ago.

To give you a feel on this busy chart for when we expect to get data off this Program,

the black part of this chart shows every project in the Program based upon where they are in the process or where they are going to be based upon the cooperative agreements that we have. The white represents pre-award. We haven't signed the cooperative agreements yet. The grayish is design and construction, and the black operation. You can see right now towards the end of 1991 we've got -- I said 8 projects in operation, 2 projects that have been completed. If you move over a year, about a year from now, we should have 20 projects in operation. And in a couple of years from now all these projects will be in operation. So data is already coming out of the Program and that data collection activity will be expanded greatly over the next couple of years.

Now, one role that we see for the Federal Government in this Program is to get information out on coal and clean coal technologies. The Program is not really designed just to build a lot of demonstration plants throughout the country. The Program is designed to commercially deploy these advanced

technologies, not only domestically but internationally as well and with it expand the utilization of coal.

We have a very, very extensive outreach and education Program, and for those of you who already have projects in our Program you're fully aware of the extent of that outreach and education Program. We have a number of documents that we provide to a wide variety of people and organizations throughout the world on the Program and on the technologies in the Program, and some of those documents are on the front table for your use and perusal. We have documents that are very specific to individual projects; topical reports. We have a couple of those completed right now that give very detailed information for anybody who needs it; policy-makers, technology people, possible users of technology, possible vendors of technology about the individual technologies that are in the Program. We have educational materials so that if you want to go to schools and help educate people on energy, specifically fossil energy with a focus on coal, we've got

materials and teaching aids and so forth to offer you. We're using them ourselves to provide courses to science teachers and other teachers at all grade levels throughout the United States. We think that it's very important to start at the basics with people about the importance of energy and the role that coal and other fossil fuels can play in our energy future.

A number of other methods we have for outreach; lots of conferences, lots of papers that are given, international opportunities. We open doors for industry in the international community and a wide variety of other things that we can go into a lot more detail on for any of you who are interested when we finish up this Program today or we can send you some materials that we have.

I think that summarizes the status of the Program and what the Program is all about. Now let me move on to the purpose of this meeting, and that is Clean Coal V.

There is a strong likelihood that Clean Coal V is going to be the last opportunity to bring advanced coal technologies into the

commercial marketplace through a cost share demonstration Program with private industry. When this Program was first put into place six years ago the intention was that it be a five-phase Program with $2.75 billion. Well, we're now into the fifth phase. What we'd like to do in the fifth phase and what the Secretary of Energy has stated publicly he'd like to do is really go for the gold ring. Really move for advances in technology in Round Five. We have a lot of advanced technology in Rounds One through Four, but now he's really looking for a major improvement in efficiency, in super-clean systems. In the technologies that coal is going to have to have to take it into the 21st Century and beyond, under a very, very stringent Clean Air Act with SO_2 emission caps and toxic emission requirements, with very a stringent Resource Conservation Recovery Act that's going to get even more stringent as Congress reauthorizes it in the next year, so we have to worry about the wastes that come off these plants. We have to worry about the fact that people don't want anything built in their backyard, the

NIMBY syndrome is everywhere. Coal right now is the focus of that, so we have to make sure that coal has the systems that are necessary to allow it to compete in the future and of course global warming, becoming the issue that it is, need to be addressed as well. Efficiency is one way of addressing CO_2 emissions and coal fired facilities. It's probably the best way of addressing it right now, but there's a possibility there might be other options as well. There might be some ways of controlling CO_2 and disposing it to further reduce CO_2 emissions.

We have some questions for you:

Should this solicitation expand beyond the super-clean, super-efficient processes to the production of liquids from coal, high-quality transportation fuels, which we all know are fuels that we're very much dependent upon foreign sources for? Should this solicitation expand upon demonstrations that are already in place and help in the deployment of those technologies by taking the next step and building an even more advanced system than those that we have in our Program?

So one of the things that we'll be discussing here today is what should the objective of Clean Coal V be? There are a number of other issues as well and in the Federal Register notice, in the materials that you were sent, you have information on those and we'll be talking through all of those.

Now, this is pretty hard to see for most of you. I thought it was important that you be brought up-to-date on the Congressional guidance that we have for Round Five. As you probably know, both the House and the Senate individually passed our Appropriations Bill. There were differences between the House and the Senate. They went to Conference. The Conferees reached some agreement and now it's up to the Full House and the Senate to decide where they want to go. The Full House took a vote last week on these various provisions. The Senate has yet to take action. We expect that's going to happen in the next day or so. But just to give you a feel for where it looks like they're coming out -- like I said, this isn't final until it's over. We've already mentioned the fact that the conferees decided

that July 6th, 1992, for the date of issuance of Clean Coal V was what they wanted. Five months rather than the previous four months for proposers to propose and then up to five months beyond that for us to make selections.

A couple of other things in here. Budget period. Up until now the law has said that we divide these projects up into three phases: design, construction, and operation, and that we require 50-percent cost sharing in each one of those phases. When we got into the Program, we realized it was probably more appropriate to allow these projects to define budget periods that don't necessarily correspond with the three phases that I just mentioned. So Congress is going along with that and is telling us that we should get 50-percent cost sharing at least in every one of those budget periods that we define in negotiation process.

You can see the language here on the left-hand side, under the House version which was agreed to by the Conferees, that proposal shall advance significantly the efficiency and

environmental performance of coal-using technologies and be applicable to either new or existing facilities. Now, this is a big change from what they've said in the past. In the past, the Program was focused on retrofit, repowering, and in Clean Coal IV replacement of technologies. Now the ground rules have changed. These are technologies that can apply to either new green fields plants or existing plants and would push the efficiency of these technologies and the environmental performance of these technologies.

I mentioned the 50-percent cost- sharing budget periods. Another major change in the Program over previous rounds, again under the House line that you can't read. Let me read you this paragraph.

"To allow a reasonable amount of confirmatory work the committee recommends that projects be allowed to propose cost-shared development work to a maximum of 10 percent of the government cost share. Work is not expected to include construction of new facilities, although limited modifications of existing facilities for explicit project

testing would be allowed."

Since Congress sees us moving this Program into really advanced technologies in Round Five, they're giving us the opportunity to fund some research, up to 10 percent of the government's share, some research as a part of these demonstration projects in Round Five. So to the extent you have a facility that you want to continue to operate to gather data from for design purposes, for example, we're given the flexibility to provide some funding for the operation of that plant. Up until now it's been prohibited. We were to fund the demonstration project itself, that's a major change.

The Congress is giving us the flexibility to use the leftover money from Rounds I, II, III and IV to fund cost overruns or extensions, added tasks on existing cooperative agreements that we have. Up until now we could only use money that was appropriated for Round One for Round One projects period. We couldn't use it for Round Two projects or Three or Four. And then the rest deals -- well, the rest is really unimportant.

Anyhow, like I said, we still don't have final appropriations language but we do have some initial guidance from Congress and I think we're obviously going to have to take that into consideration in the discussions that we have here today. So, with that, I thank you very much and turn it back to Jean.

MS. LERCH: Before we take a break, I just have a couple of announcements. I would just like to mention that the opening session this morning has been recorded, as will this afternoon's session. However, the working sessions will not be recorded to encourage free and open discussions. When the Chairs provide their summaries, you will have the opportunity to correct the record, if necessary. And, also, everyone who is registered today will receive the proceedings, which will include both this meeting and the Louisville meeting. And included in that package will be the transcripts from the meetings, a list of attendees, and the summaries.

We'll take a 15 minute break and then reconvene into the working groups. We

originally assigned three groups but we're consolidating the third group into the first two, so if you would check with the registration desk and find out which group you've been assigned to. We'll use the two break-out rooms on the other side of the hallway here, it's the Regency and the Rouge. We'll break for lunch about 12 o'clock. There is a coffee shop right down to the right and around to the right a little further is a dining room which serves a buffet. There's a message board outside. If you're expecting any messages they will be posted there, and if you need any assistance in making any reservations or changing anything the registration people will be glad to help you. Thank you.

(Whereupon, at 9:28 a.m., the morning session concluded.)

AFTERNOON SESSION

(On the record at 3:34 p.m.)

MR. SIEGEL: We'll wrap this meeting up. It's nice to see we still have some people here. But then again, in weather like this, in a place like this, I'm not sure where you're going to go if you're from out of town anyhow.

I very much appreciate the very lively discussion that we had in both of the working groups. I think we learned an awful lot that's going to help us in structuring Clean Coal V.

For those people who happen to be here who might be involved in Clean Coal V from the Department of Energy, I'm going to say something here that might surprise you and hopefully we can abide by this -- we'll try anyhow. It's my hope that what we'll do in Clean Coal V is actually go back now with a team of people, draft a PON, and issue it in draft form, and maybe have another public meeting with that draft solicitation in your hands. Get some views, because maybe there is something we're going to put in this PON that

just doesn't make any sense at all and we'll hear that from you, or there's some further tinkering with the document that we want to have before we issue it in final form in July. I don't know legally if we can do that. I don't know what kind of problems we're going to get into in trying to do that sort of thing, but, anyhow, it's a possibility. It's a concept that I just wanted to bring to your attention.

We do have another public meeting coming up on November the 12th in Louisville and I hope to see those of you who want to sit through another one there as well. I expect we'll have a larger turnout. It doesn't necessarily mean it's going to be a better meeting. Frankly, I think that when we have a small group like this, number one, we get people who are really interested in discussing the issues and the discussions are quite lively.

Before we get to a summary of the sessions by the two moderators, I'd like to introduce Alan Edwards who is the energy and environmental advisor to Governor Sullivan. I

should have asked Alan to come up here earlier this morning to welcome us but I forgot to do that and I thought I'd give him an opportunity right now in the Closing Plenary Session. Alan.

MR. EDWARDS: Thank you. Jack decided to let me get in a word here but since I'm at the beginning of the plenary instead of the end I don't get in the last word. I think he reserved that for himself. Governor Sullivan did ask that if I had the opportunity to take it and extend his personal thanks to everybody who did come and took the opportunity to participate here, for those of you especially who traveled from out of town to get here, considering the weather, you know, we doubly appreciate that.

We would also like to extend our thanks to the Department of Energy staff who took the time to put this together and to take the effort to go out to the public, both here and in Louisville, and any other meetings that might occur to get the public input into this entire process, because we consider it to be a very important process and one in which the

public comments should be solicited and strongly considered, because there's many aspects of the Program we're working one.

Governor Sullivan would have been here in attendance himself except he was called to Washington, D.C., and originally had plans to come back tonight. For those of you who are flying, who might be flying out of Denver tonight or in the morning, it's kind of like an exchange Program I assume, because Governor Sullivan will be snowed out, you guys will be snowed in and we'll just treat that as kind of an exchange for a while and call it a balance. The only comment we would like to make is Governor Sullivan met with Admiral Watkins at the Western Governors Association meeting, when it was held in Rapid City, and they did talk about a variety of issues among which is coal. And coal plays important roles both in the East and the West but with respect to the Department of Energy and the issues they are addressing like with the Clean Coal Program, we look at coal as being a national Program. There are national issues and a lot of joint mutual factors we all need to look at. The

discussion today has been very enlightening to me in a lot of areas, and I don't profess to be an expert in any of the areas I deal in, just interested is probably my main claim to fame. But, as we go through that, there's conditions that are unique to the East and unique to the West, but, in general, coal is important to all of us as a future energy supply, so this kind of involvement from everybody is important. Again, the Governor asked me to extend his appreciation for your participation and I would like to do that and say I thank you very much and wish everybody actually a very safe journey home. I hope it does work out well for you to get back. Thanks.

MR. SIEGEL: Thank you, Alan. I should mention that Alan, through the Governor, we've gotten a lot of support for the Clean Coal Program. The Governor brings a more national perspective to the Program as well since he now is Chairman of the Western Governors Association, which makes him a pretty important player and, of course, he's got a very strong interest in coal and the success

of this Clean Coal Program, so I appreciate, Alan, your being here and saying those words.

Let's have the wrap-up sessions now. Joe, would you please give a summary?

MR. STRAKEY: Thank you, Jack. I'd like to mention that my Co-chairs today were Stewart Clayton and Rita Bajura. We had a lively session. It wandered and covered many issues so I'll try and bring it all together and provide some organization as I give the summary. If I've missed anything, please, correct me when I'm done.

We had a diverse group of attendees. There was not much representation from the utilities sector, there was one utility present. I felt that the group had a strong emphasis on retrofit technologies or developing approaches that can satisfy the needs of existing facilities rather than new plants, and a lot of the views that were expressed were along those lines.

The first topic we covered was the objectives of the fifth solicitation. It was suggested that the emphasis be on advanced systems and high efficiency -- excuse me --

that placing the emphasis on advanced systems and high efficiency biases the PON towards new units rather than upgrades of existing units to facilitate life extension of those units.

Additionally, it was proposed that energy efficiency and environmental performance are not necessarily mutually compatible goals. An example was given in PON IV which gave about 15 percentage points for efficiency and that certainly did not benefit retrofit projects. We talked about what the problems we were facing were in both new and existing units and they were things like ozone non- attainment issues and its implication for NO_x technologies; air toxic provisions of the Clean Air Act, which have a very strong impact on coke oven plants or coke plants, and we talked about that example at length; the need for new technologies to satisfy the requirements of industrial users; the issues of visibility degradation, and regional haze in the West and also in the East, and felt that these needs impacted both new as well as existing facilities. The discussion re-enforced the idea that if the goal is using

coal as a resource then retrofit of existing plants using clean-up technology should not be penalized by making clean-ups subservient to efficiency considerations. And there was an opposite opinion that previous rounds, not necessarily IV, had emphasized retrofits so why aim PON V at the same goals when the focus should be switched to improving options for new or replacement plants.

The general conclusion of all that was there is a balance that should be struck between new facilities and plant upgrading. They both face the same problems and solutions for either one of these areas can contribute to a solution for the overall problem.

We got onto the issue of global warming and got into that at a little length and the theme of the discussion was that balance is needed. Global warming can be addressed through efficiency improvement but efficiency should not be overemphasized so as to exclude retrofit technologies.

With respect to the CO_2 control or removal of CO_2 after combustion, it may be too early in the R&D phase to interest a utility in a

cost-share demonstration, although the 10 percent R&D provision in Clean Coal V could help to remove some of the risks of a demonstration.

Overemphasis on CO_2 emissions could lock out non-utility projects in Clean Coal V, and allowing extra credit for CO_2 removal, as was done in Clean Coal IV, was viewed as an acceptable approach as long as it does not become a dominant evaluation criteria.

We talked a bit about the role of different size projects, and in this I mean slip stream versus demo project versus deployment project. Some early slip stream projects were closer to a pilot plant test than to a true demonstration, it was felt by some of the people present. A full stream demonstration is needed before vendors can offer commercial guarantees on the technology. DOE should include replicated projects of earlier slip stream tests in the Clean Coal Program to bridge that gap between slip stream tests and commercial deployments; that was one view of one of the people in the audience.

Some felt that the Clean Coal Program had

an original goal of demonstration project and that goal should not be changed to a goal of deployment or slip stream projects.

Another issue we talked about was modification of the amount of requested assistance, and the question here is: Should DOE be able to address the total cost proposed or eliminate part of the cost in order to reduce the cost of the project and target our moneys more toward the development part of the project rather than the deployment part.

It was suggested that if the solution was a new technology solution rather than an engineering solution; that the project should be entitled to a greater percentage of DOE cost share because risk mitigation is greater. What I am saying, in this one, is that if the proposed technology is a new technology, rather than an engineering augmentation of something that's already available, that we might address the cost share percentage for either one so that we share in a higher percentage if it's a completely new technology rather than a minor improvement over something that we've already got.

Some of the other topics we talked about were: Should DOE prescribe a size range? Should DOE have a best and final list in order to prioritize how we spend our dollars? Can DOE be more specific about its policy on cost reduction considerations? For example, elimination of duplicative equipment in the demo. A general conclusion here was, evaluate and select the project as proposed. Stress that we favor those projects that eliminate duplication. Say that right up front on the PON. And it was felt that if we start slicing up the project then the team that was organized could fall apart.

We had some discussion on Western coal issues and, in this case, it was felt that the conditions of the West are somewhat different than they are in the East and should be facilitated in the Clean Coal V PON.

We talked about visibility degradation and regional haze considerations, and other things in the West, and that ratcheting down of NO_x emissions, carbon dioxide, air toxics and other things like that, even for low sulfur Western coals can be important. What

is required are cost-effective solutions that cater to those Western considerations, and these are different from the issues that are involved with shipping Western coals into eastern markets. Western coals face the same problems that eastern coals do with respect to some of these things; visibility degradation and so on, and we should be looking for what we need for Western coals in that area.

We talked about air toxics at some length. Should DOE be looking at air toxics in the Clean Coal V PON? It was felt there's a 3-year study that is on-going by EPA and that the results from this study are very important before we get into putting a lot of credit onto developing technologies under Clean Coal that can reduce air toxics when we don't even know which ones are important at this point. It was felt that giving some extra credit for this may be appropriate but it should not be too much, and that we should be careful when we look out at this, toxic reductions are not -- not to allow the air toxic elimination to be shifted to other streams, such as water streams.

We talked about whether monitoring of air toxics in Clean Coal projects is a problem and there was some views felt that there will be a lot of industry reluctance to get into monitoring which can subsequently result in regulation of the utility industry based on that monitoring. Generally the conclusion was that there's just not enough known about the future in the air toxics area at this point to give much emphasis or credit to those technologies that claim to reduce air toxics.

And we talked about some of the other areas for extra credit, such as reduction of CO_2, which I already mentioned, and, in addition to that, minimizing water use in the project. That is especially in the West, or perhaps even giving credit for excess production of water. Reduction in solid waste is another area. We have given credit for that in the past. Reduction of liquid waste streams. All of these are areas where one might get some extra credit for additional benefits. There were two views expressed here: One was do away with any extra credit. The other view was I strongly disagree with

that. So the preference, if there's any consensus at all out of this, to clearly define what we want to do and if we're going to give extra credit in the PON say exactly what it's going to be. We should take a look at the all the issues that may be important and make sure we don't double count in this area.

Are there any corrections or additions to this?

MARSHALL MAZER: I would like the record to show that the comments you made with regard to air toxics were in the context of air toxics from utilities and not from coke plants. That's sort of a different realm of activity because there we have standards, we're not dealing in the abstract, but whether or not standards will be --

MR. STRAKEY: Yes, the development of standards is a utility thing that will take place after that 3-year study is completed. There are already provisions in the Clean Air Act, which is what you are mentioning, that will affect coke ovens in about 1997-98 time frame; correct?

MARSHALL MAZER: Yes.

MR. STRAKEY: All right, anything else?

MARSHALL MAZER: Thank you.

MR. STRAKEY: Thank you.

MR. SIEGEL: Thank you, Joe. Before we go on, before I forget, I want to give some special thanks to Jean Lerch and Faith Cline for spending a lot of time organizing this meeting. She promised us that by having this meeting so early in the year we wouldn't run into any weather problems, so she'll have to work on that one.

Gary, do you want to summarize your session?

MR. FRIGGENS: This microphone scares me a little bit because I tend to be a loud speaker anyway. Is it coming across okay? Good.

I want to thank my Co-chairmen Gary Voelker and John Ruether for their valuable contributions both to the content of the discussion and to the flow of the group today. I'd also like to thank John for his valuable notetaking, from which I'm going to be speaking, and also for being so subtle in

pointing out to me when I made stupid statements or asked stupid questions. I appreciate that, John. I'd also like to thank the participants for their active participation. It was a free and open discussion. They brought up a lot of good points and I don't think there were any punches pulled. I think we all felt pretty comfortable that we could say whatever we wanted to. I had to try to get Sam to leave the room once but he wouldn't do it, but I think the value of a small group showed itself in our discussions.

Of the 12 non-DOE people who were in the session when we began, and I might mention that a few people came in after we took this survey, 7 represented technology vendors, manufacturers, consultants, those types of people. Only one represented an end user of a clean coal technology. Two were non-DOE government or pseudo- government types of organizations, and there was one press representative, and the twelfth person, I don't know who they were. Three of the participants had been involved in previous

public meetings and six had been involved in preparing previous clean coal proposals, so that gives you a little idea of the background and the types of representatives and viewpoints that we had in our group.

With regard to topics, we first talked about the objectives of the PON and what the focus should be. I might mention that right off the bat it was underscored that whatever the objectives and criteria turn out to be, DOE needs to take particular care that they are stated very clearly, as clearly as possible so that situations are avoided where proposers might invest in proposing only to find out after the fact that they shouldn't have because of statements made in the PON that might have been unclear. The key theme of the discussion focused on the relative importance that should be placed on longer-term high-efficiency types of technologies versus near-term reduction of SO_2 and NO_x. There was disagreement among the group. Those who opposed the emphasis on high thermal efficiency seemed to be much more vocal in sharing with us their concerns.

There were three suggestions put forth which addressed a different focus from CCT IV and these were: first, to emphasize the category of new fuel forms, if you will, by giving the criteria that are explicitly associated with them more weight.

Secondly, the point was made over and over again by several people that efficiency should entail the entire process and that DOE should be careful not to limit its definition of efficiency to thermal efficiency around a combustion process, for instance, but we need to look at the entire system from coal mine to customer in evaluating the contribution toward efficiency of a particular process.

Third, a criterion should be defined on the basis of dollars-per-unit of pollutants removed by a process.

There was also real concern that a post-2010 target is too far in the future to attract serious investments on the part of those providing dollars simply because of the present worth involved in that kind of time frame. When asked what kind of incentives DOE could provide to offset that concern, there

were two basic options identified. One was that DOE could consider a greater than 50-percent cost share on their part but, aside from the obvious concerns about that, there was also disagreement among the group as to whether or not that would really be a solution.

The other option was to make an effort to slant projects toward a smaller scale by putting less emphasis on having complete commercial-scale projects and perhaps a little more emphasis on near-commercial or subcommercial-scale for demonstration.

We talked about the question of how DOE should address CO_2 in Clean Coal V. It was pointed out that CO_2 is a political reality and that DOE has to address it in the PON either directly or indirectly. It was felt that an emphasis should be placed on high-efficiency processing as a way to address and adequately treat CO_2 emissions. It was felt that there should be no additional criteria beyond high-efficiency that are used, and then you'll see later in our notes we turned that around and actually combined a criterion for air toxics

and CO_2 as a separate item.

The question was raised as to whether DOE ought to entertain technologies that specifically would address removing CO_2 from gas streams and either disposing of them in the sea or underground and that was -- if it wasn't unanimous it was very close -- that it is not something that DOE should address in the next round of Clean Coal.

With regard to air toxics, it was acknowledged that there's a lot we don't know about air toxics. Our knowledge is poor in terms both of which toxics associated with technologies are the most important ones, and then where those toxics actually report in a process and how, in other words, emerging technologies emit and/or capture particular toxics that are identified. Despite this, it was felt that toxics were important enough that they shouldn't just be treated as extra credit, and this is in opposition to what we heard from the other group. Rather, the group felt they were important enough that there should be a separate criterion that addressed air toxics, albeit making sure that the weight

was not very high because of the uncertainties that exist.

It was finally, I think, concluded that perhaps the way it should work is that DOE should simply invite proposers to describe the way that their process operates, vis-a-vis air toxics, and that using some very general guidelines DOE should then attempt to rate the proposal based on air toxics performance and what is known about the whole subject of air toxics at that time. Again the uncertainty was pointed out, but there was a strong feeling among the group members that it still merited a separate criterion.

A question was raised as to what changes, if any, could be made in Clean Coal V that might elicit more response from the West. I think there were primarily two items that were mentioned. One was, again, the concept of evaluating thermal efficiencies on a whole system basis from coal mine to customer to end use rather than thermal efficiency around a particular process.

The second concept was to, again, boost the weights of those criteria that are

directly affected or associated with new fuel forms.

We talked a little bit about Program policy factors and whether there ought to be changes or additions to those, and I think the conclusion was, in general, that DOE should do everything it can to try to limit its dependence, its reliance on the Program policy factors, and to the extent that that can be done by more carefully structuring the criteria, that's the approach that should be taken.

It was pointed out that in many of the Program policy factors that there was not a very tenable solution because they necessarily encompassed the projects in total rather than individually. But the point was made that to the extent possible DOE should limit its dependence on those.

The topic was raised about the possibility of DOE making selections based on reduced scope, again similar to the topic that the other group discussed, primarily with the prime purpose being to focus DOE dollars on those aspects of the technology that are

within the envelope that needs to be demonstrated and to take DOE dollars away from those aspects of a technology that are already commercial and don't need demonstration. There was a lot of discussion in that area but I think the bottom line was that everyone recognized that there were a lot of problems that would be associated with that kind of scheme, time being one of particular seriousness that was mentioned. Also the group recognized a problem with having to go back to proposers to essentially negotiate prior to selection, which was untenable, so the bottom line was there just didn't seem to be a reasonable way to allow selections with considerations based on a reduced scope.

With regard to the developmental activities being an option that DOE has in Clean Coal V, it was overwhelmingly felt by the group that DOE ought to exercise that option, but it was also pointed out that DOE needs to be especially careful in explicitly identifying the limitations that would be associated with that kind of work up front, in the PON, so there's no misunderstanding about

the types of activities that would or would not be allowed.

Finally, we talked a little bit about the weighting of the criteria, and there was about an even split in the group. Roughly half the group felt that the criteria weights used in Clean Coal IV were appropriate and adequate. Another half of the group felt that they wanted to see revised weights, and these revisions appeared in the commercialization half of the technical score and accounted for 50 percent of the technical score. The proposed revisions included boosting the environmental performance from 15 up to 20 percent, reducing the approved thermal efficiency score from 15 down to 5 percent, leaving the commercialization approach at 20 percent, and providing a 5 percent score for a combined air toxic and CO2 reduction criterion. I think I've described that discussion accurately. There was also discussion about even combining the environmental with the improved efficiency score, to lump them together to make a total of 30 percent and allowing a proposal that was

exceedingly good in one area to exceed the 15 percent ceiling that would otherwise exist. So that was a little twist on the revision.

I've tried to reflect everything to the best recollection of myself and the notes that I have and John's notes and if anyone in the group has any corrections or if I've missed any points, that you thought were particularly important, I invite you now to mention those.

Good. Again I thank you for your participation. I enjoyed the discussions and look forward to dwelling more thoroughly on some of the ideas that were presented. Thank you.

MR. SIEGEL: Gary, thanks, and again thanks to all of you for your active participation and sticking with us to the very end here. Hope to see you in Louisville in a couple of weeks.

I understand, by the way, that they're calling for another snow storm tonight and so for those of you who need to get out of here you might want to consider that in your planning. Thanks again. See you in Louisville.

(Whereupon, at 4:06 p.m., the meeting was concluded.)

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C E R T I F I C A T E

IN RE: U.S. DEPARTMENT OF ENERGY
PUBLIC MEETING:

LOCATION: CHEYENNE, WYOMING

DATE: OCTOBER 30, 1991

I, CRAIG HERRMAN, OFFICIAL COURT REPORTER, DO HEREBY CERTIFY THAT THE FOREGOING TRANSCRIPT, NUMBERED PAGES 1 THROUGH 53, INCLUSIVE, IS A TRUE AND ACCURATE TRANSCRIPTION OF THE PROCEEDINGS IN THE ABOVE-ENTITLED MATTER, BY ME ELECTRONICALLY RECORDED, ON WEDNESDAY, OCTOBER 30, AT LITTLE AMERICA, 2800 W. LINCOLN WAY, CHEYENNE, WYOMING.

Craig Herrman

CRAIG HERRMAN
COURT REPORTER

APPENDIX II

LOUISVILLE MEETING ATTENDANCE AND TRANSCRIPTION

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Name	Company	Mailing Address	Telephone
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Ron Bertoch Executive Vice President	BNI Coal, Ltd.	P.O. Box 897, 1136 West Divide Ave. Bismarck, North Dakota 58502	(701) 222-8828
Gerald Blackmore President	G. Blackmore, Inc.	3784 Jamaica Court Lexington, Kentucky 40509	(606) 293-6616
John E. Bonestell Executive Vice President	Korf Lurgi Steeltec, Inc.	5250 77 Center Drive, Suite 330 Charlotte, North Carolina 28217	(704) 527-0001
Don Brown Director	Abdelmalek & Associates Inc.	13610 Barrett Office Drive Suite 200 Saint Louis, Missouri 63021	(314) 965-7000
Carolyn H. Byszewski Marketing Services Manager	Allied-Signal Inc. Aquatech Systems	7 Powder Horn Drive, P. O. Box 4904 Warren, New Jersey 07059-5191	(908) 563-2873

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Eddie R. Case Senior Staff Engineer, Raw Materials, Ironmaking, & Refractories	Armco Research & Technology	705 Curtis Street Middletown, Ohio 45043	(513) 425-6219
James N. Chapman Manager, Advanced Energy Conversion Department	The University of Tennessee Space Institute	Tullahoma, Tennessee 37388-8897	(615) 455-0631
J. Gordon Clayton President and Chief Executive Officer	Heartland Fuels Corporation	744 Heartland Trail Madison, Wisconsin 53708-8923	(608) 831-4444
Eugene C. Crossland Manager, Business Development	Pure Air	7540 Windsor Drive Allentown, Pennsylvania 18195	(215) 481-5589
N. Dharmarajan	Central & Southwest	1616 Woodall Rodgers Dallas, Texas 75266-0164	(214) 754-1373

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U. S. DEPARTMENT OF ENERGY

OFFICE OF FOSSIL ENERGY

CLEAN COAL TECHNOLOGY V PUBLIC MEETING

PLENARY SESSION

Galt House Hotel

140 North 4th Avenue

Louisville, Kentucky

November 12, 1991

8:35 a.m.

P R O C E D I N G S

MS. LERCH: Would everyone please take a seat and we'll get started.

Good morning. My name is Jean Lerch and I work for the Office of Coal Technology and I'd like to welcome everyone and thank you for attending the second public meeting of the Clean Coal Technology Program in preparation for the fifth solicitation. We conducted our first meeting in Cheyenne, Wyoming, on October 30th.

The purpose of the meeting is to invite your views and recommendations. Your input will be provided to the Source Evaluation Board which is responsible for putting tcgether the solicitation.

It will also be provided to the policymakers at the Department for their consideration in providing guidance on the solicitation.

The Department wants to make sure that this Program is responsive not only to the needs as those in Washington see them but, more importantly, to the needs as you see them.

You are aware of the Conference Report dated October 17th making appropriations for the Department of Interior and Related Agencies which provides that the general request for proposals will be issued not later than July 6th of 1992 and selections are to be made on or before

May 6th of 1993.

The proposers have five months to prepare their proposals and submit them to DOE and, in turn, DOE will have five months to evaluate those proposals and make selections.

We will begin this morning with a short plenary session. We will break out into working groups which will be moderated by DOE officials. You will have the opportunity at this morning's and this afternoon's sessions to state your views, have them debated, and the chairs and co-chairs will note them.

At the conclusion of this afternoon's session, the chairs will summarize your discussions and then open the floor to questions.

With that, I would like to introduce Jack Siegel. Jack is a Deputy Assistant Secretary for Coal Technology and he's responsible for the Clean Coal Technology Demonstration Program as well as the Coal R&D Program.

MR. SIEGEL: Thank you, Jean, and good morning.

There are a lot of familiar faces out in the audience today, but there are also some that I'm sure are not all that familiar with the Clean Coal Program, so this morning just for a few minutes I'm going to give you a little bit of background on the Program and provide you with the status of the Program and then, more importantly for the purposes of this meeting, I'm going to provide you with some

information, some guidance that we've received from Congress for the conduct of Round Five and that might help frame some of the discussion that you all are going to have throughout the rest of this day.

The primary goal of the Clean Coal Program is to demonstrate at full commercial-scale advanced ways of utilizing coal and to provide the data that's necessary for you to make commercial decisions about the use of these technologies in the marketplace.

It's a very unique Program in that the Federal Government is there to provide financial assistance. The projects themselves are your projects. You make all the technical decisions. We are there to reduce the financial risks associated with what are typically technically risky first-of-a-kind projects.

We do expect something out of this Program. We do, for example, want to ensure that the taxpayers' money is well utilized so there are decision points in these projects where we and you as the industrial participants make decisions about whether or not to proceed with these projects.

We monitor the projects. We want to make sure that data is collected and data is disseminated. We want to make sure that these technologies are moved into the commercial marketplace as quickly as possible once they are

disseminated.

You, the industrial participants, retain the intellectual property and you retain the demonstration project itself.

We also expect -- that is, the Federal Government expects to get a return for its investment. We do have a repayment provision that provides us with some return on our investment if your technology is commercial, if you do make commercial sales of your technology.

The Clean Coal Program is divided into five pieces -- Clean Coal One, Two, Three, Four and Five. Selections were just made in the Fourth Round of the Program, so Clean Coal Five is the last planned round of the Clean Coal Program.

You can see here the general milestones associated with the entire Program to date. As you can see, we expect the Program is going to actually last well beyond the year 2000 simply because many of the projects in the Program are of long duration and will continue to operate well into the year 2000.

Overall, the Federal Government is providing about two and three-quarter billion dollars in its share of this Program and you can see the funding distribution on this chart.

Clean Coal Five, as you can see on this chart, is

the $600 million Program where we, the Federal Government, are providing up to $600 million for cost-sharing with you in the demonstration of these projects.

You can see the funding distribution over Fiscal Year, the fact that we only have $150 million in fiscal Year 1992 certainly does not impede this Program at all.

1992 is the year that we're going to be soliciting proposals from you. We really don't need very much money to solicit proposals. The money is actually going to start being spent in a big way in Fiscal Year 1993.

This chart shows by round the number of proposals we received, the projects we have active in the Program and the funding levels for those projects.

You can see that over the life of the Program so far 187 proposals were submitted. We have 42 projects that are actively a part of the Program, for a total funding level of $3.31 billion plus whatever the funding is for Round Four.

You can see the $600 million for Round Four of DOE's share. We don't exactly know what the private sector share is going to be just yet since we're negotiating the cooperative agreements with them right now.

The very positive thing on this chart is that although we are required by law to only provide up to 50 percent of the costs of any one project, in fact the Federal

Government has only been asked to date to provide about 40 percent of the project costs. The industrial participants are putting up 60 percent of the project costs so far in the Program.

The projects are located everywhere throughout the United States, and I'll just flash these charts up very quickly. These are the projects that are active in Round One. These are the Round Two projects.

You can see in Round Two all of them are east of the Mississippi River. Round Two was a heavy focus on acid rain.

The focus changed some in Round Three and you can see a more even distribution throughout the Nation, and in Round Four, also an even distribution.

We have a wide variety of technologies already as part of this Program. You can see here the two circulating fluid combustors, three pressurized fluid combustors, a number of integrated gasification combined cycles, a number of SO2 control, NOX control, combined SOX and NOX control, new fuel forms and other technologies so we already have a wide variety of technologies.

I should mention that although three-quarters of these projects are located east of the Mississippi River, many of these technologies, in fact most of these technologies that are demonstrated in the East have

applicability to the West on low sulfur coals and western environments and vice versa, projects in the West have applicability in the East as well.

These next few charts just provide you a little bit more information on the projects that we have in the Program so far. I think I'll skip through them very quickly.

This chart shows the status of the 42 projects in our Program. Really, the bottom line of this chart is that we are making great progress.

We have two projects that have already been completed, 8 projects in operation, 12 in construction, 10 in design and 10 projects that are still in negotiations. Of course we just selected 9 of those within the last couple of months.

This very busy chart shows the milestones of the 42 projects of the Program. I think the important thing to note is, if you can find the 1991 column on here you'll see, as I mentioned, that we have a number of projects in design and construction and operation.

By about this time next year, we should have about 20 projects in operation so this Program really is progressing at a very rapid pace and we hope very soon to be collecting data from every one of the 42 projects that are currently a part of the Program.

The last thing I wanted to mention about the Program itself is that we view this Program not necessarily just as a demonstration Program. Of course demonstrating these technologies is one step in the process of getting these technologies into the commercial marketplace.

However, the real success of this Program is determined by how many of these technologies actually get deployed commercially, and as a result we have a very strong emphasis in our Program on outreach and technology transfer and education.

The exhibit in the next hall is an example of our Outreach Program. Those of you who are involved in our Program know the extent of our activities, but those of you who are not part of our Program can come to any one of us from the Department of Energy during this meeting, or after this meeting, and learn a lot more about it.

It's a very extensive activity that we are doing in concert with our industrial participants to ensure that the data gets to the proper authority, not only domestically but internationally as well, so that we can move these technologies, once demonstrated, into the commercial marketplace.

Now let me get to the purpose of our meeting here today and that's Clean Coal Five.

As Jean mentioned, the purpose of the meeting

today is to obtain your views on how we ought to be focusing Clean Coal Five.

Of course we have guidance from Congress, which is going to be obviously very important to us, and I want to go through that guidance with you in just a minute.

We also have some direction that at least the Department of Energy at this point in time is thinking about.

For example, on this chart we in the Department of Energy feel that the next round, which may be the final round of the Clean Coal Program, ought to focus on really advancing coal using technology to allow those technologies that are going to be needed for coal to play beyond the year 2000 to be a part of the Clean Coal Program, so an emphasis on high efficiency, super clean systems, super clean because of the Clean Air Act cap on sulfur dioxide emissions and the expectation that EPA is going to ratchet down nitrogen oxide control requirements, with the expectation that EPA's toxic requirements are going to be very, very tight, with the expectation that when the Resource Conservation and Recovery Act gets reauthorized this year solid waste disposal is going to be very, very difficult, even more difficult than it is today and, of course, with the expectation that the NIMBY syndrome is not going to change, that people are not going to want very much built in their backyards and as a

result the clean efficient systems are going to be the ones that will be considered.

That's one possible focus of the Program. Another possible focus is a production of liquid fuels from coal.

Certainly we are overly dependent upon the import of oil from unstable sources. We know that coal can be transformed into liquid, high quality liquid fuels for transportation applications, so maybe that should be the focus or part of the focus of Round Five.

There are also some who I think believe that this Program also ought to be looking at trying to ensure the deployment of these technologies that are already part of our Program by replicating them. That's not a view shared by everyone but I put it on this list because some people did recommend that.

There might be other things that we ought to be focusing on in Clean Coal Five and we'd like your views on these as well as others that you might have.

As I mentioned, we did receive some Congressional guidance, very important Congressional guidance for the conduct of Round Five. I won't walk you through this entire chart. This chart was put together prior to the passage of our Appropriations.

Actually we're still in the situation where we

don't have a final bill signed by the President but I understand that that may happen today. Let me just summarize for you the key guidance that we do expect if the President does sign the bill that we will have from Congress.

Number one, as Jean Lerch mentioned, the solicitation for Round Five will be issued on July 6th of 1992. That's a compromise between what the House and Senate had in their individual bills.

Unlike Rounds One through Four, there will be 10 months between the time the solicitation is issued to the time that the Department of Energy must make selections. In the past it's been 8 months.

What Congress has done is provided you with one extra month. Instead of four months, now five months to submit your proposals. They have also provided us with up to an additional month for our evaluation process.

We found through the execution of the Program so far that the projects don't neatly fit into phases as we've defined them before in our Program. In the law actually three phases were defined -- design, construction and operation.

We found that in fact there were a number of other decision points that you and we would like to have in the conduct of some of these projects so in Round Three of the

Clean Coal Program we invented the term "budget period" and now in the law Congress recognizes the concept of budget periods and, as you will see later, Congress not only recognizes the term "budget periods" but requires that at least 50 percent cost-sharing from you in every budget period, not just every phase of the Program.

A very important consideration that Congress has provided to us is shown on the third bullet in the lefthand column here. Let me read it for those of you who can't see it from your seats.

"Proposals shall advance significantly the efficiency and environmental performance of coal-using technologies and be applicable to either new or existing facilities."

As you recall, in Rounds One through Four, Congress used the terms "retrofit and repowering" and in Round Four, "replacement." Those terms are now gone. They've opened up the competition to anything but, as you can see, there's a heavy emphasis on significant efficiency and environmental performance improvements in new or existing facilities.

Another very important piece of guidance that we received from Congress is the second bullet on the lefthand column and let me read that one to you, as well.

"To allow a reasonable amount of confirmatory

work, the Committee recommends that projects be allowed to propose cost-shared development work to a maximum of 10 percent of Government cost-share. Work is not expected to include construction of new facilities, although limited modifications of existing facilities for explicit project-related testing would be allowed."

Now as I understand the rationale behind this piece of guidance, Congress recognized that if we were trying to really advance technology in Round Five, there might be the need for some projects to continue to collect data for design purposes or materials determinations or whatever at the research scale at a pilot plant scale.

For the first time in this Program we are allowed to provide some funding, it's a limited amount, up to 10 percent of the Government's share, for those pre-demonstration types of tests, and one of the issues that we would like to discuss with you today is how do we implement that, how should we write the solicitation to allow you to take advantage of this and what other elements of the solicitation and the evaluation criteria should play in this consideration.

The only other bit of Congressional guidance that we received that I think has application to today's meeting is the fact that Congress did also say that we're allowed to use funds that were appropriated for one round of the

Program for projects that have been selected in another round of the Program.

Congress did not go so far as to say that we could use leftover funds from any previous round to move into Round Five, for example, until we've selected projects so we do have our hands tied there, but if we do have leftover money, for example, from Round One we can use it for cost overrun reserves or additional test work projects in Rounds Two, Three and Four.

I think that summarizes what I wanted to say this morning. I look forward to the discussions.

I do want to say, before Jean comes back up again, that your views aren't only appreciated but they are listened to. For those of you who have participated in our public meetings in the past, I think you would agree that many of the thoughts that came out of these public meetings found their way into our Program opportunity notices and into our model cooperative agreements, so we look to you to provide us with guidance on how to proceed.

Thank you very much.

MS. LERCH: Before we take a break, I'd just like to make a couple of announcements.

I want to mention that the Opening Plenary Session has been recorded, as will the Closing Session. However, the working group sessions will not be recorded.

We want to encourage free and open discussions. Your names and affiliations will not be mentioned in the report associated with your statements.

When the Chairs present their summaries at the end of the session, you'll have the opportunity to correct the record, if necessary.

We're going to take about a 15-minute break and then we'll reconvene into the working groups. All the groups are down this hallway.

Your folders have four working groups. We've decided to consolidate that to just three working groups so if you would check with the registration desk during the break we'll consolidate the fourth group into the first three working groups.

(Recess.)

AFTERNOON SESSION

3:35 p.m.

MS. LERCH: We'd like to thank everyone for their active participation and to reiterate that your input provided today will be given to the DOE officials for their consideration in the solicitation.

Before we hear the session summaries, I would like to mention that we will be putting together proceedings, which will include information from both this meeting and the Cheyenne meeting, and we will be sending those out to all of you who have registered today.

Now we will here the summaries, starting with working group number one which was chaired by Gary Friggens, followed by Gary Voelker for number two and, finally, Joe Strakey for number three.

MR. FRIGGENS: Thank you.

I would like to thank my Co-chairman, John Ruether, first for his help in recording the substantive comments and ideas raised in our session, for his help in steering the flow of discussion and for the subtle and sometimes not so subtle viewpoints that he ably represented.

I'd like to thank the participants for their forthright comments and the innovative suggestions. I felt we had many and I was impressed with the extent of participation in our group.

I tried to be tolerant but I know there were a lot of things that went unsaid because we just didn't have time and I apologize for that.

To give you a little idea of our group, there were about 25 participants, of which 12 I would classify as technology vendor representatives, including manufacturers, consultants and so on. About 6 represented technology users, four were non-DOE government representatives and one was from academia.

Half of the group had been involved in previous clean coal proposals and also about half of the group had been to previous Clean coal Technology Public Meetings, so all in all it was a fairly experienced discussion group that we had.

The first topic we talked about was the focus for Clean Coal Five and we spent an awful lot of time on this. My summary will just try to capture the highlights.

There was definite disagreement among the group as to the importance which DOE should place on high efficiency. Some felt that the efficiency criterion in Clean Coal Four slanted the field against retrofit technologies and their fear is that even more emphasis will be placed on high efficiency in Clean Coal Five.

Others felt that such emphasis would be good because it would promote new innovative technologies such as

integrated gasification fuel cells, HAT cycle and so on.

There was consensus that selection criteria are not equally fair to technologies across the board and that DOE should take a hard look at what it can do with regard to using different criteria for different technology applications, either directly or through creatively structuring the criteria.

However, it was also pointed out that the formulation of the criteria is the principal way that DOE can define the technologies that it's interested in.

The group was asked if DOE, in the past, had been sufficiently clear with regard to the eligibility of technologies and there was general acknowledgement that it had.

One participant questioned whether it might be beneficial for DOE to list those technologies which would not be eligible. However, there was no support for this among the group, although it was considered critical that DOE do everything it can to make the criteria very clear.

One view offered an alternative to listing ineligible technologies, namely by setting minimum standards for the criterion being evaluated, whether it be efficiency or NOX removal or economics or what have you.

There was strong agreement in the group that alternative fuels from coal should be allowed whether they

were liquid fuels for transportation or power generation or such things as co-production or chemical feedstocks, in short, anything that would help coal to displace natural gas and imported oil.

Several participants felt that Clean Coal Five criteria should be set in such a way as to address the hurdle that they see being created by the Clean Air Act Amendments and that there should be a balance of emphasis between retrofit/repowering types of technologies and new applications.

It was suggested that prior to Clean Coal Five, DOE should talk to end users to find out what technologies the end users think ought to be the focus of the solicitation.

Also it was suggested that the selection criteria need to emphasize to a greater extent the economics or the project balance sheets for a commercialized technology.

With regard to CO2 emissions, it was stated by the group that Clean Coal Four was perceived to be unfair in that it gave double credit for reduced CO2 emissions through, first of all, the high efficiency criterion and, secondly, compounded by the extra credit that was offered for environmental performance.

The group was unanimous in its position that CO2 reductions should be addressed only through an efficiency

criterion and that DOE should be careful not to double-count with additional credit.

The group, with one or two dissenters, felt that technologies, which are for the express purpose of removing or disposing of CO2, should not be given explicit consideration.

On the topic of air toxics, the majority of the group didn't favor any consideration in Clean Coal Five for air toxics as they relate to utility applications since there is so little known and the data base is simply not sufficient for DOE to base selections on.

On the other hand, it was recognized that the Clean Air Act Amendments have already set limits for toxics for such things as coke ovens and therefore in non-utility industry applications consideration of air toxics would be appropriate.

What I thought was an innovative suggestion was to base the criterion on the reduction of regulated pollutants and this would enable DOE to consider toxics in the case of industries such as coke ovens (steel-making), while not penalizing utility proposals because there is no basis for toxics that is useful enough for decisions to be made on.

The group felt that it was critical that DOE use current and future projects to gather as much information as possible on toxics that are being emitted by the

technologies that are being demonstrated.

With regard to relative weighting of the criteria, a clear majority suggested that more weight should be placed on the commercialization factors and less weight on the demonstration factors. This approach would tend to promote higher risk and higher payoff technologies.

One proposal was offered to decrease the efficiency criterion from 15 to 5 percent and raise simultaneously the environmental performance criterion from 15 to 25 percent.

However there was a great deal of disagreement in the group about this proposal so there was no consensus for sure in the matter.

A suggestion was made that DOE needs to be much more explicit in how it evaluates the economic aspects of proposed technologies, even to the point perhaps of providing a copy of the model.

The loud and clear message was, "be as clear as possible, be as explicit as possible."

With regard to Program policy factors, a recurring area of disagreement at public meetings has been the relative importance DOE places on developing long lead time, high efficiency, high performance technologies as opposed to technologies that will find application in the nearer term.

It was suggested that a Program policy factor,

specifically Factor D, could be expanded to assure a balance between these two kinds of applications.

With the passage of the Clean Air Act Amendments of 1990, it was also thought that the need to give special attention to near term reductions of CO2 and NOX emissions is diminished and, therefore, continuation of this factor should be re-looked at if there is no requirement in legislation that would require it remaining.

Finally, we talked a little bit about the evaluation of development activities and how that should be accomplished in the selection process.

Several participants cautioned DOE to be careful that it doesn't end up merely cost-sharing R&D activities for which a proposer might have little or no intent in continuing on to the demonstration phase.

The group agreed that DOE has to be careful in how it defines the activities which would be allowable under the concept, but that it does need to define those activities to make sure that everyone is clear up front about what is allowable and what is not.

Finally, the group agreed that DOE should evaluate the proposed development activities within the structure of the existing criteria rather than creating new criteria for their evaluation.

I apologize for hurrying through. I did the best

I can. I'm sure there are many salient points that I missed from our discussion this morning.

At this point I would like to open the floor to any participants in our group who feel like I missed something or misstated something. I'm open to correction or modification or addition.

QUESTION FROM FLOOR: Regarding the emphasis that was placed regarding the air toxics, it was my impression from our group that we sort of muddled through it a little bit and the last point that you made regarding using regulations as a guideline for determining when and where air toxics should enter into the decision process, that was where we ended up, that our primary emphasis was pretty much on that, that the group was closed as saying that those regulations would determine whether the air toxics would be used as a criterion at all.

MR. FRIGGENS: Yes, that's right and I thank you for that clarification.

Anyone else? Thank you.

MR. VOELKER: My name is Gary Voelker. I was the Chairperson of group two. I would like to first thank my Co-chairperson, Rita Bajura, for doing an outstanding job.

I would also like to thank all the people who participated in the working group for their very candid, thoughtful and incisive comments. I think we have quite a

bit of very good input. We have a lot of good recommendations to consider and I would like to thank you for that.

We discussed 6 general areas. What I would like to do is just give you a summary of some of the key points that were made in each of those areas.

The first area that we discussed was the objectives of Clean Coal Five. The focus of discussion was basically the relative importance of environmental performance versus efficiency.

As was reported in the first working group, there was definitely not an absolute consensus. There was in fact some dissent, if that's the right word. There was some feeling that even more importance should be placed on efficiency and some feeling it should be left the same and some feeling decreased importance should be placed on efficiency.

We actually took a vote. The vote came out three out of 21 to increase the importance of efficiency, 8 to decrease the importance of efficiency and 10 to leave efficiency the same.

I'm reporting those numbers to you at the request of the working group because initially I was going to say that we had an agreement and the majority felt a certain way but they said just give them the real numbers and let them

decide themselves whether it's a majority.

Another thing in this particular area that we talked about is that the solicitation of Clean Coal Five should place substantial emphasis on the economic performance of the technologies. This specifically applies to the commercialization plan criteria. It was recommended that we should place greater emphasis or at least substantial emphasis on the economic performance.

We should continue to emphasize a diversity of technologies and all of the ways available to us to do that, We should develop category-specific environmental performance base lines as they relate to the different categories of technology. This relates to a fairly lengthy discussion that I think several groups have had relating to Appendix I and its applicability and how we use it in the evaluation.

It was recommended that we attempt to be clearer as to the objectives and the thrust and the technology categories that we're looking for in the solicitation.

Also, and lastly, it was pointed out in the discussions that advanced coal cleaning could be a lower capital cost option for some power plants and should be treated accordingly in Clean Coal Five.

With regard to modifications to the amount of requested assistance, which is the second topic that we

discussed, we basically agreed that there was no need to make any changes in the procedures that now are being followed, however we should clearly explain the ground rules in the solicitation to the potential proposers.

With regard to air toxic criteria, there were several differing opinions and points discussed. I thought there was a very worthwhile discussion because we had some people representing projects that really have little to do with air toxics and other projects that, in essence, the major thrust of the project might be the reduction of air toxics.

It was agreed -- I should say recommended -- that one thing to consider would be to give up to 15 extra credit points for projects that would reduce air toxics but no more than the total of 20 points under the environmental performance criteria.

With regard to carbon dioxide and global warming, it was agreed that we should basically leave it as is, leave the extra credit as it was in Clean Coal Four, but explain in greater detail exactly how those extra credits might be applied and, in fact, if possible say how many extra credit points might be available and how they might be distributed.

With regard to income arising from the project, the revenues coming into the project and how they should be treated, again the consensus was, the actual unanimous

agreement was that there should not be a change, but again we should explain this in the solicitation, should be added into the solicitation.

With regard to the question of allowing for up to 10 percent of the Department of Energy's funding to go to the developmental costs, particularly existing facilities and operations and/or modifications to those facilities, it was felt that it should be explained in the solicitation that the intent of that action (the intent of that change) is not to make R&D Programs or to move this Program into the area of making a research and development Program, but only as a confirmatory activity supporting the demonstration projects themselves.

Also in this area we discussed an item we really didn't have in the Federal Register and that was the question as to whether or not any restrictions should be placed on that 10 percent development funding -- i.e., should there be a restriction placed as to whether or not that money must be spent in the United States.

There was a minority opinion in our group that said that it should follow exactly the same limitations as in the demonstration project itself -- i.e., it must be in the United States and just use U.S. coal. However, that was a minority opinion and most felt that we should not make that restriction but the proposer should be required to show

the benefit to the U.S. of going forward with the project if it were to be outside the U.S.

As Gary did, I'd like to apologize for not necessarily being able to cover all of the very, very good points that were made. I tried to summarize some of the key points.

If there are any particular points that any members of the group would like to make to this entire group while we're here on the record, I would invite them right now to do that.

Thank you very much.

MR. STRAKEY: My name is Joe Strakey and I was the Chairman of working group three. My Co-chairs were Stewart Clayton and Doug Uthus, and I have nine pages.

I would like to thank all the participants in the group. I think we did have a good discussion. The group was comprised of quite a few technology developers, several utilities, some representatives of engineering firms and A&Es, and individuals from government organizations such as public utility commissions representatives, one from GAO, a member of the trade press and coal a representative of interests.

The first topic we covered was the focus for Clean Coal Five. I believe there was some consensus here and that was that Clean Coal Five should focus on a major stepwise

advance in high efficiency and low emission technology, but there was a caveat and that was "don't forget the retrofits." Look for ways to extend ongoing CCT project efforts to get important additional data on these ongoing projects. This would be the cheapest and fastest and easiest way to get data which could be important by the 1996 timeframe when decisions about the second phase of the Clean Air Act would be made.

They suggested that we need a bridge to these new technologies and that retrofits can provide this bridge.

We discussed evolutionary versus revolutionary developments in technology. In other words, should we focus on or put a lot of effort on polishing the data that we're already getting from the existing demos?

One important question asked here was should an industry fund this type of product, improvement work, rather than the Government. That person felt that Clean Coal Five should focus on advanced technologies and not on product improvement type developments.

There were quite a number of other opinions on this topic, such as we should reassess the current and future needs of the utility industry with respect to the provisions of the Clean Air Act and determine what the needs are for the retrofits.

This person felt that additional data is needed on

cyclone boiler NOX control and on selective catalytic reduction, at least on demonstration of SCR on large scale.

Also, that existing effort is needed on NOX control for existing units. The NOX control regulations, of course, will be more restrictive as time passes.

If there was a general conclusion here, it was that we need to focus on both the old units and technologies to improve their performance, as well as these new stepwise advances and high efficiency technologies.

The next topic we covered was air toxic issues and some of the opinions are that, first, we don't have the data yet. We should emphasize on getting these data before we start to make decisions about technology development; that technology specific to air toxic control should not be a separate focus or a separate category for Clean Coal Five.

If a technology can achieve some reduction in air toxics, then a certain amount of extra credit would be appropriate but it should not be a separate category.

Interestingly, a number of the people in the group felt that the air toxic issues could be more important in the future than the issues surrounding global warming or greenhouse gases.

In that area, namely CO2 or greenhouse gases, the group felt that efficiency is the appropriate mechanism to credit CO2 reductions and be careful, again as in Gary's

group, not to double count by putting it into other criteria as well.

They also felt that it's probably premature to go into CO2 removal in any significant way at this point.

We touched on coal liquids and the need for additional technology to produce liquids from coal. Some of the members of the group felt that this should be one of the focuses for Clean Coal Five but certainly not the focus.

Coal liquids, it was felt, can be made currently at $30 to $35 a barrel and this really isn't too far away from being commercially viable so it is an interesting thing that we should be focusing on in Clean Coal Five.

They felt it shouldn't be limited to transportation fuels alone, but address other liquid fuel needs and that what we need in the way of demonstration is large single train demos in the range of 1,500 to 2,000 tons a day as opposed to the rather small demos that have been done in the past.

We talked a bit about pre-combustion technologies and some of the members of the group saw a need for additional work in front-end technology development, front-end cleanup processes, namely moisture reduction and restructuring of coal into cleaner more efficient lower moisture fuels. This is a topic that covers both western as well as eastern fuels.

Some of the members of the group recognized that potential export markets for these kinds of fuels could be important, not just in Asia but in Europe as well, and that export of the fuels would be more significant for the country than export of the technologies.

We talked a bit about developmental activities or those pre-demonstration activities to get the needed data before actually running the demo as part of the demonstration project. It was emphasized that we should establish that there is a clear link between the developmental activity itself and the demonstration, that it's not just a disguised way of doing additional R&D to properly account for the higher risk in the kind of project where there is a critical test that has to be performed under the demo, we should include that technical risk in the technical risk criterion and account for it appropriately there.

We mentioned a bit about industrial processes and some of the people in the group felt that additional industrial projects would be very desirable. That is, industrial projects that can use coal efficiently and cleanly and that DOE should encourage these kind of projects by stating clearly that it's our intention to have such projects in the Program and to clearly delineate in the criteria , how industrial projects would be evaluated.

We had some discussion about the relative weights between the cost and finance proposal and the technical proposal and in general the group felt that balance that we used in Clean Coal Three and Four -- namely 75 percent for technical, 25 percent for cost and finance -- is a reasonable and appropriate balance and that we should keep it about the same.

On the issue of Program income, again the consensus was to keep it the way we did it in Clean Coal Three and Four so that we can reasonably account for Program income and Program revenues.

There were several other topics that we went through quickly near the end, namely foreign technology -- should foreign technology be penalized when it's included in a demonstration project. The answer to that was very clear -- no, it should not be.

With respect to the NEPA process, there was a comment that we should accelerate the NEPA process. The people from DOE said we would like to do that very much and it was suggested that one way we could do that is through closer teaming with the participants in developing all the information that we need.

We briefly touched on the cost and performance methodology that we have used in the past and it was suggested that if we do use it we should explain it in a lot

more detail so that the proposers can clearly understand how it comes into the evaluation process.

Very briefly, that's it. Are there any additions, corrections, deletions to my remarks?

QUESTION FROM FLOOR: Excuse my ignorance here. The NEPA review comes into play at what stage?

MR. STRAKEY: The NEPA review comes into play throughout the process. You are asked to supply certain information in the proposal and asked to supply a lot more information afterwards.

It becomes critical not so much at the signing of the cooperative agreement but it's critical before we start major construction activities; before we start digging.

QUESTION FROM FLOOR: So it's addressed at the proposal stage?

MR. STRAKEY: There is some information that is required there because it enters into our project-specific NEPA analysis of the proposal.

MS. LERCH: I would just like to mention that in the Federal Register Notice -- if anybody does have any additional comments that they would like to submit in writing later on, as stated in the Federal Register notice, you have until January 20th of 1992 to submit those in writing to the Department.

At this time since there are no more questions, I

would just like to give a special thanks to Faith Cline who put a lot of effort into making sure that these meetings run smoothly, and also to Estelle Hebron.

Again, I'd like to thank everyone for their participation and have a safe trip home.

(Whereupon the matter concluded at 4:05 p.m.)